REAL LIFE IN THE PUB

an observational study on predictors of young adult social drinking

Sander Bot
Real Life in the Pub

An Observational Study on Predictors of Young Adult Social Drinking

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Sander Maria Bot
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Promotores:
Prof. dr. Rutger C.M.E. Engels
Prof. dr. Ronald A. Knibbe (Universiteit Maastricht)
Prof. dr. Wim H.J. Meeus (Universiteit Utrecht)

Beoordelingscommissie:
Prof. dr. Reinout W. Wiers (voorzitter; Radboud Universiteit Nijmegen; Universiteit Maastricht)
Prof. dr. Ap Dijksterhuis (Radboud Universiteit Nijmegen)
Dr. Mitch J. Prinstein (University of North Carolina at Chapel Hill)
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CHAPTER 1

introduction
CHAPTER 1 - introduction

This chapter aims at introducing the topics addressed in this dissertation. First, some background information will be provided on alcohol consumption in general and then, more specifically on alcohol consumption in young people. Next, past research on the etiology of alcohol consumption and some problems and challenges will be discussed. Then the research approaches taken in this thesis will be discussed, followed by an outline of the other chapters.

Alcohol Consumption in General

In most Western societies, alcohol consumption can be considered normative behaviour, at least among late adolescents and adults. Alcohol is, together with tobacco, one of the most prevalent and socially accepted drugs. In comparison to the use of other drugs, which are often mainly associated with negative outcomes such as adverse health effects, delinquency, and antisocial behaviour, the use of alcohol is also, partly, associated with, among other things, social facilitation, stress alleviation, positive health outcomes, celebrations, and a sophisticated lifestyle.

Notwithstanding the positive features, alcohol consumption can be considered the cause of many negative outcomes. Some of these outcomes are effectuated on the long term, like alcohol dependency, Korsakov disease, liver cirrhosis (for a review: Norstrom & Ramstedt, 2005), and several forms of cancer (e.g. Poschl & Seitz, 2004; Purohit, Khalsa & Serrano, 2005). Even though binge drinking in young people increases the likelihood of becoming a problem drinker or an alcohol dependent later in life (Jennison, 2004), it is unlikely that occasional drinking events are strongly related to long term outcomes.

This may in part explain the fact that the risks of heavy occasional drinking are often played down by for example parents, partners, and friends. Occasional heavy drinking, or even drunkenness, is considered socially acceptable in large parts of the population. Still, many of the risks that result from the consumption of alcohol are immediate. Heavy episodic drinking leads to hangovers, may lead to brain developmental problems in adolescents (Sher, 2006), and seriously increases the risks of absence from school or work (Upmark, Moller & Romelsjo, 1999), arguments, aggression (Exum, 2006), traffic accidents (e.g. Reynaud et al., 2002; Vingilis et al., 1993), as well as undesired sexual intercourse and unwanted pregnancy (Ceperich et al., 2004). For these reasons, heavy occasional drinking, aside from possible long term effects, received increased attention of researchers and policy makers in the past decade.

Alcohol Consumption in Young People

Especially in young people, heavy episodic or binge drinking is highly prevalent, and accounts for a large amount of their total alcohol consumption (approximately 75%; Knibbe, Oostveen & Van de Goor, 1991). Even though possible negative consequences are known by the majority of young
people, social benefits such as toughness and precocity are attributed to young drinkers by their peers (Chassin, Tetzloff & Hershey, 1985; Spijkerman, 2005). Most young people, at least after having initiated drinking, hold positive expectancies over drinking alcohol (Wiers, Gunning & Sergeant, 1998), and many believe that seriously enjoying a party with friends or going out to cafes, bars and discos is impossible without the consumption of alcohol. Also, proposals to be a designated driver are welcomed by many, becoming one is aspired by few.

Ironically, young people are in the age group most susceptible to many of the risks described. The predictors of episodic drinking are other than those of habitual drinking. Both habitual and episodic drinking may be in part determined by individual factors like gender, age, and heritability, but episodic heavy drinking may for a larger part be predicted by factors like holidays (Van de Luitgaarden, Wiers, Knibbe & Boon, 2006), celebrations, day of the week, and friendships with heavy drinkers. Where habitual drinking may lead to an individual’s selection of, for example, place of residence with opportunities to go out nearby, or selection of heavy drinking friends, within a situation many aspects are fixed and may directly trigger drinking in those present.

Because heavy episodic drinking by young people mainly takes place in the presence of friends or other people (e.g. Wells, Graham, Speechley & Koval, 2005), it can be considered social behaviour. This implies that, besides individual and situational explanations, interpersonal explanations may be relevant in the prediction of drinking. The assumption in this thesis is that in a group of individuals involved in alcohol consumption, social norms of drinking behaviour “suitable” for the situation emerge. These norms may in part be genuine, in that they can be observed and
quantified, but the perception of these norms and their perceived obligations may differ among members of the group. The drinking norms may be communicated by different means, such as the drinking of individual group members, remarks given on others’ drinking rates and offers of alcoholic drinks made. Drinking norms may differ between groups, but also between individuals or subgroups of individuals within a group. These norms may shape the drinking of individual group members, for reasons of normative influence – resulting from wanting to be liked, accepted and approved of by others –, and informative influence – resulting from wanting to be correct and to understand how best to act in a given social context – (Insko et al., 1985). For some people in a group social norms may have a larger impact on drinking than for others, dependent on the perceptions of the obligation coming with these norms, and individual variability in the tendency to conform.

The operation of moderators influences the magnitude of impact of many predictors of heavy episodic drinking, not only interpersonal ones, but also individual and situational ones. It can even be stated that – assumed that interpersonal, individual and situational predictors are exhaustive when it comes to the total range of factors shaping drinking – when one or two of the types of predictors are weaker, the others will be stronger.

This means that actual drinking within a situation is shaped by a multitude of factors, as shown in Figure 1. For example, the drinking of a 20-year-old male student visiting a birthday party may be shaped by his expectations about the effects of alcohol consumption (individual explanation), moderated by his gender; the fact that there’s a party at hand (situational explanation), moderated by the gender distribution of this party’s visitors; and may finally depend on the influence of other drinkers at the party, moderated by this student's position in the group (interpersonal explanation). This example illustrates the complexity of doing research on the predictors of young people’s drinking.

Even though many studies exist in which the aetiology of drinking is analysed, not many of them succeed in discriminating between the individual, situational and interpersonal specificity of the predictors. For example, many studies report associations between drinking of friends, but much fewer succeed in successfully disentangling the impact of friendship formations, situations in which time is spent, amounts of time spent, directions of influence, and processes of influence, on the origination of the reported associations. The complexity of the processes that determine drinking can be hypothesised as an important cause of inconsistent findings, and of the fact that little variance of the dependent variable is accounted for in many studies (e.g. concerning friend’s influence on drinking: Jaccard, Blanton & Dodge, 2005).

This complexity may also be part of the problem in questionnaire research into the causes of drinking. Not only do questionnaire studies automatically incorporate biases in reporting through recall problems, social desirability, and the fact that many predictors of drinking may play a role on a subconscious level; they are also less suitable in identifying what causes are dominant in certain situations. More sophisticated questionnaire studies are able to overcome some, but not all of the
difficulties mentioned, e.g. by using multi-informant designs or multiple waves. Laboratory experiments on e.g. implicit cognitions involved in shaping drinking (Wiers et al., 2006) may give better insight into less conscious, automatic processes shaping drinking. Still, until now, they are not suitable to cover all of the processes and outcomes resulting from the social nature of drinking as occurring in many situations.

Young people’s drinking especially takes place in social settings, and they are in the age group most at risk for and most involved in problems associated with episodic drinking. This makes an accurate assessment of the social nature of their drinking very important in, at least, the understanding, but possibly also prevention of (the consequences of) heavy episodic drinking.

The complex reality, and the problems this causes in answering research questions can lead to the conclusion that simplicity of research design and standardisation of research setting are of major importance to accurately test our hypotheses. However, drinking is a social and spontaneous behaviour and trying to answer partial questions by simplifying the studied situation may lead to flinging out the baby with the bathwater. Therefore it can be reasoned that studying drinking should be done in a situation similar to that in which drinking is common. This, however, may lead to the situation that assessing the causes of observed drinking is equally, or perhaps even more, difficult as compared to assessing them by means of questionnaires. While studying drinking in real life settings, the number of variables interfering with an individual’s drinking behaviour may be very large and hard to assess. Data gathered in real life can be considered very reliable when it comes to the assessment of drinking itself (Plant, Kreitman, Miller & Duffy, 1977), but when trying to answer questions about situational, individual and interpersonal predictors of alcohol consumption, at least three problems emerge. The first is that situational, interpersonal, and individual predictors may vary enormously between (and within) the studied drinking situations. The second is that interpersonal and individual predictors may be hard to assess when encountering young people in a time-out situation in their everyday lives, and the third is that ethical problems will arise by observing people in a situation in which other people can walk in and out and some persons may be under the influence of alcohol.

Until now, a number of fruitful attempts have been done to do justice to the complex reality in which drinking takes place. The early work of Bruun (1959) is a good example of an in-depth study of the predictors of social drinking in small groups. He based the conclusions of his dissertation on information from questionnaires, observations, and interviews. Since Bruun’s work no studies in real life or in naturalistic settings have incorporated predictors of such a diverse nature, although some have thoroughly gone into partial questions. Van de Goor (1990) for example scrutinised situational predictors of drinking in discos and youth centres. Researchers like Caudill and Kong (2001), and others (see review of Quigley and Collins, 1999) studied direct modelling effects of drinking. They found that imitation effects of drinking occur, even among people who are strangers. These findings strongly support the idea that interpersonal processes predict drinking. On the other hand, it is unlikely that influences on drinking in a naturalistic setting (i.e. with friends) occur in a similar manner.
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To overcome the problems of both questionnaire and observational studies in real life, for most studies described in this dissertation a method was developed to combine the strengths of both methods, and at the same time, to attempt to minimize the difficulties identified for each. By employing this method we aimed to create a research situation in which justice is done to the complex situation in which drinking takes place in groups of young people in everyday life, while at the same time being able to assess, study or control for a multitude of factors that may affect each individual’s drinking. We trust this method will be a powerful tool in answering questions about the aetiology of drinking in young adult people. As far as we know, this is the first study to observe and analyse drinking in groups of more than two people in a naturalistic setting, while simultaneously assessing background information through questionnaires. This opens the possibility to answer new, but also existing questions, by applying data gathered at an unusual, but at least equally valid manner than is formerly done. In this thesis we scrutinize some existing, and some new questions concerning young adults’ social drinking. Later in this chapter we will give an overview of the specific questions we aimed to answer in this thesis.

Research Methods

Using our observational bar lab method, two different studies were executed and reported in this thesis. Further, we additionally used the data of a longitudinal questionnaire study in one chapter. The design of the studies is described below.

- Real Life in the Pub

For the purpose of this dissertation, we set up a bar laboratory furnished as an ordinary small pub, and invited undergraduate students to bring seven people (older than eighteen) of their friendship group to join our study for two sessions in a year (2003-2004). A distracting procedure was employed to avoid drawing the participants’ attention to the actual aim of the study, i.e. examining alcohol consumption in an ad-lib drinking setting.

The participants were asked to fill in a questionnaire containing various questions about e.g. drinking patterns, friendships, and types of relationship within the group. After completing the diverting task, they had a break of a little less than an hour, which they had to spend in the bar lab. Drinks could be ordered at the bar; soft alcoholic beverages (i.e. beer and wine) and non-alcoholic drinks were available and for free. After the free time slot, a second diverting task was carried out. After 2 hours the participants were taken home by taxi.

During the 2-hour session video and audio recordings were made. Two cameras were used, inconspicuously placed in two corners of the bar lab and their images were combined to a single image. A research assistant operated the camera in an observation room adjacent to the bar lab. The recordings were combined and analysed using observational software “The Observer” (Noldus Information Technology b.v., Wageningen). Examples of our setting and the software:
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Participants were told in advance that they would be observed during the complete experiment and all gave written permission for the use of these data for our study. We emphasized that they were not obliged to drink alcohol, because non-drinkers or light drinkers were also of interest for our study. Pilot studies were conducted to verify the credibility of the setting and procedure (see Bot et al., 2005). The participants strongly endorsed the setting’s credibility and none of the 32 participants in the pilot studies guessed the actual aim of the study.

The research proposal was approved and funded by the Netherlands Organisation for Scientific Research. The local medical ethical committee (CCMO Arnhem-Nijmegen) approved of the protocols for our study. Debriefing was done after the second assessment. After debriefing, the participants were reminded of the possibility to withdraw their consent to use the observational data in our research or ask additional questions. None of them withdrew their consent.

- Alcohol and Media

One chapter in this thesis concerns the data gathered from an observational study on the impact of alcohol commercials and alcohol in movies on the drinking behaviour of male dyads who were watching these movies (2006). Male friend pairs were invited to join this study and show their natural behaviour while watching a movie. They were informed about the fact that their drinking behaviour was recorded on camera and analysed. An experimental 2x2-design was applied, with movies in which much vs. little alcohol was consumed and shown, and commercials for both alcohol and other articles vs. only commercials for other articles than alcohol in between parts of the movies. The drinking behaviour, i.e. what was consumed and when the sips were taken, was observed and counted, enabling to answer questions about the effects of media exposure of alcohol on direct drinking.

- PPS

For practical reasons, and to extend the findings of our observational studies, we focussed on one research question applying another dataset. This dataset consisted of two waves of questionnaire data with six months in between, gathered from 11 to 14-year-old adolescents (2000-2001), all in the first year of secondary education where they meet lots of new people. Information on the students' individual characteristics, and their relationships with others in the school were assessed.

**The case of social drinking in young people**

The situation in which drinking was studied for this dissertation was standardised, as described above. This does not, however, imply that alcohol consumption in various groups and individuals is assumed to be similar. One of the basic assumptions in this study is that drinking is partly explained by situational characteristics (which are to a large degree controlled for in this study), and partly by interpersonal and individual characteristics of the participants. These interpersonal and
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individual characteristics may be immediately observable within the drinking situation, but may also be distal (like, for example, upbringing) while still affecting drinking in this particular drinking situation. The chapters in this dissertation draw upon this actuality in answering several research questions.

Outline of This Thesis

Chapter 2 scrutinizes whether friendship characteristics play a role in the amount of influence exerted on reported drinking in 12 to 14-year-old adolescents. Sociometric status differences between friends and reciprocity of friendships were hypothesised to affect the magnitude in which the friend’s drinking affected the participant’s drinking (data: PPS).

In chapter 3, the search for friend’s influence on drinking goes on, but now in our observational research context. In a social drinking context, friends may or may not be around, and in most cases other persons than the best friend are present. We attempted to map the role of the best friend in shaping the drinking of people in a broader social context by hypothesising that the best friend has no stronger influence than others in the drinking situation (data: Real Life in the Pub).

Chapter 4 digs deeper into the actual process of interpersonal influences in drinking. By means of sociometric analyses of the group structure, hypotheses are formulated about which individuals in a group might be more decisive in determining drinking of other group members, and about which group members may be most at risk of being influenced concerning drinking behaviour. Influence is hypothesized to take place by passive and active means, namely by modelling others in drinking and by persuading others to drink (data: Real Life in the Pub).

In chapter 5, the impact of parental behaviour, i.e. their alcohol consumption and parenting, on young adult drinking in a peer group without the presence of the parents is studied. Although many studies found effects of parenting on young people’s drinking, in this study we assessed drinking in a situation in which parents have no immediate influence on their offspring’s drinking, and in an age group that is often no longer under direct control of parents. The results may be relevant in the discussion about long-term influences of parental behaviour on drinking (data: Real Life in the Pub).

The relation between personality and alcohol consumption has often been studied, but these studies have led to diverse outcomes. Possibly the effects of personality on drinking are twofold and may therefore have led to confusing findings. On the one hand, personality may affect drinking in a direct manner, in such a way that people with a certain personality are more able to appreciate the effects of alcohol. On the other hand, personality may cause heightened susceptibility to be influenced by others’ drinking. In chapter 6 direct and indirect effects of personality on drinking are tested (data: Real Life in the Pub).

In chapter 7 the effects of alcohol expectancies are tested in a social drinking situation. The expectations people have about drinking alcohol are highly predictive of reported drinking, but were
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Figure 2. Hypothesised predictors of heavy episodic drinking
never tested concerning actual observed drinking within a certain context. It may be that certain expectancies are more important than others in shaping drinking in e.g. a social context. In this chapter hypotheses are formulated and tested on the impact of different expectancies on young adult drinking in a peer context (data: Real Life in the Pub).

It is well-known that males drink on average more than females. It is uncertain however, whether the processes leading to a certain drinking behaviour are different or the same for males and females. In chapter 8 interpersonal predictors of male and female drinking are reported in order to facilitate a comparison between the causes of drinking between the sexes. Men are hypothesised to be affected stronger by the average drinking levels in their group than women. Further, expectancies from the consumption of alcohol are expected to interfere in the relation between gender and peer influence (data: Real Life in the Pub).

Some studies have suggested that being involved in activities, while in a wet situation, leads to lower alcohol consumption. In chapter 9 we again tested this question, but also examined whether this effect is lasting when it comes to total alcohol consumption during a certain period of time, or whether certain individuals manage to titrate their drinking, by drinking more at less active moments (data: Real Life in the Pub).

Chapter 10 applies another dataset to test whether imitation of drinking also takes place on a micro-level and from a screen instead of from a person. We hypothesised that in the case of watching a movie, friendship pairs would imitate the exposure to and the drinking of alcohol that is seen on a television screen (data: Alcohol and Media).

Finally, in chapter 11, the findings of the previous chapters will be summarised and discussed. In Figure 2 the research questions described above are integrated in the basic model shown in Figure 1. One possible predictor of heavy episodic drinking is added here, namely initial drinking. It can be discussed whether initial drinking can be considered an individual predictor. Initial drinking may also be shaped by individual, situational and interpersonal factors. The pragmatic approach taken in this thesis is, that when drinking is hypothesised to be mainly influenced within the observed situation (e.g. by peer influence), effects are mostly measured by correcting for initial drinking. In the case of influence, assumed to be not unique for the observed situation but being relatively stable over time (e.g. parent influence; alcohol expectancies), initial drinking is not corrected for.
References


Sher, L. (2006) Functional magnetic resonance imaging in studies of neurocognitive


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CHAPTER 2

friend’s drinking and adolescent alcohol consumption: the moderating role of friendship characteristics

Based on:
CHAPTER 2 - friend's drinking and adolescent alcohol consumption

Abstract

Friends are assumed to exert a substantial influence on young people’s drinking patterns. The current study focused upon the effects of the drinking behaviour of the best friend on the alcohol consumption of 12-14-year-old adolescents. Furthermore, we hypothesized friendship characteristics (i.e. reciprocity and sociometric status differences) to moderate the extent in which adolescents were influenced by their best friends. Longitudinal data of 1276 adolescents and their best friends were used to examine whether the adolescent’s friend's drinking behaviour, reciprocity of the friendship and status differences between friends affected the magnitude of change in the adolescent’s drinking behaviour. The findings showed that best friend’s drinking behaviour is related to adolescent’s drinking both cross-sectionally and longitudinally. Cross-sectionally, this association was particularly strong between mutual friends and when considering friends with lower status. In longitudinal analyses a different picture emerged. Respondents were most likely to adopt their friend’s drinking behaviour when it was a unilateral friend with a higher status.
CHAPTER 2 - friend’s drinking and adolescent alcohol consumption

Introduction

Peer influence is considered to be a major cause of initiation and persistence of alcohol consumption among adolescents (Schulenberg, Maggs, Dielman, Leech, Kloska, Shope and Laetz, 1999; Swadi, 1999; Urberg, Değirmencioğlu & Pilgrim, 1997). Peer influence, also referred to as peer socialization, can be categorized into modeling (i.e. adolescents adapt their drinking behavior to the drinking behavior of peers), and persuasion (i.e. adolescents are being encouraged or persuaded to adapt their alcohol consumption) (Graham, Marks & Hansen, 1991). Both types of peer influence may facilitate similarity in drinking behavior in peer groups and this similarity is often interpreted to be the result of peer influence. High similarities in drinking behavior in peer groups are found in many studies (e.g. Bogenschneider, Rafaelli & Tsay, 1998; Engels, Knibbe, De Vries, Drop & Van Breukelen, 1999; Prinstein, Boergers & Spirito, 2001) and are often interpreted as the outcome of peer influence processes.

However, the designs of some of these studies do not warrant drawing such conclusions. Cross-sectional designs are unable to correct for directionality and therefore longitudinal designs should be used. Longitudinal designs open the possibility to correct for past behavior and are therefore able to point out directionality (Andrews, Tildesley, Hops & Li, 2002; Gaughan, 1999; Li, Barrera, Hops & Fisher, 2002; Maxwell, 2002). Refined longitudinal designs also make it possible to correct for the effect of selection of friends (Engels et al., 1999; Gaughan, 1999, Urberg, Luo, Pilgrim & Değirmencioğlu, 2003). Selection can be corrected for, by ascertaining that increasing similarity in drinking behavior between peers in a group is not the result of selection and deselection of individuals, but the result of adaptation of drinking behavior (Bauman & Ennett, 1996; Fisher & Bauman, 1988).

Studies with longitudinal designs usually find selection effects to be stronger than peer influence regarding patterns of alcohol consumption (Bauman & Ennett, 1996; Bullers, Cooper & Russell (in adults), 2001; Engels et al., 1999b; Fisher & Bauman, 1988; Gaughan, 1999), but usually a unique contribution of peer influence to the amount of adolescent alcohol consumption is reported, sometimes even accounting for more variance in drinking behavior than selection effects (Sieving, Perry & Williams, 2000). Taking these studies into consideration, one can assume peer influence to be a substantial source of adolescent alcohol consumption.

However, it can be questioned whether peer influence will be having an equal impact under different circumstances. Peer relations may take many shapes and it seems logical that friendships with different properties may have differential effects on the magnitude of peer influence exercised. Urberg et al. (1997) found that close friends affected initiation and persistence of alcohol use, and that the close friend as well as the friendship group influenced drinking to intoxication. According to the study of Urberg et al., the best friend seems to be more influential than the friendship group in general. Friendships may be categorized on the basis of ‘best friends’ and ‘other friends’, as Urberg et al. (1997) did, but other friendship aspects may also play a role in the adolescent’s susceptibility to peer
CHAPTER 2 - friend's drinking and adolescent alcohol consumption

influence. For example, some adolescents consider themselves to be a friend of a peer, without this assumption being reciprocated. Such friendships are called unilateral. When, on the other hand, considered friendships are reciprocated, they are called mutual. Aloise-Young, Graham and Hansen (1994) found that respondents without a reciprocal friend (who they called group outsiders) were affected more by their desired friends than group members were. Their results, however, may perhaps not be valid for alcohol consumption, because they studied smoking behavior. Nonetheless, Gaughan (1999) reported that adolescents’ frequency of drunkenness was influenced to the highest degree by peers who were to become friends in the future, but were not mutual friends initially.

Adolescents may also vary in other aspects, like sociometric status. Sociometric status refers to the adolescent’s standing in a peer group and is usually measured by asking peers to indicate which persons are the most and least popular in a certain group, usually a class (e.g. Newcomb & Bukowski, 1983). Friends may be fairly equal in sociometric status, but might just as well be quite different. A friend with higher status can provide an adolescent with extra status and this might be a reason for not wanting to be affiliated with lower status friends. For this reason, adolescents usually end up in a peer group with individuals having a rather similar status. It might also be that adolescents become friends with peers having a similar status, because we just like the people who are similar to us in some ways (Newcomb, 1963). But this does not mean that friendships between adolescents with different status do not occur. Reasons for involvement with individuals with lower status can be found in the appreciation of similarities other than sociometric status, like having the same values and attitudes. These same values and attitudes reassure us that our beliefs are accurate (Festinger, 1954) and people perceive that as very rewarding (Clore & Byrne, 1974). Another reason for having a friend with lower status is that this friend might be willing to fulfill a complementary role in the friendship, providing the higher status adolescent with more control in this friendship (Forsyth, 1999). To our knowledge, peer influence processes and drinking have not been studied in relation to friends with different sociometric status. Concerning smoking, it was found that in the transition from middle to high school, a period of rapid growth in smoking initiation occurred in boys with prior low sociometric status (Dishion et al., 1995). It might be that lower status adolescents are more receptive to persuasion.

In sum, friendships can be sorted on at least two dimensions, which both concern equality. The first dimension discriminates between unilateral and mutuality. One may wonder whether a unilateral friendship can be seen as a friendship, but considering the involvement of the adolescent nominating the other as a friend, at least this youngster can be expected to be affected. Almost automatically, such friendships are not egalitarian, considering the fact that the one not nominating the other has the choice of taking the other as a friend, but has chosen not to. The second dimension concerns possible differences in status and deals with equality in that manner. A difference in status might be the case, apart from the issue whether friendships are mutual or unilateral. Status differences might exist between friends and therefore one adolescent may be more in control of their interactions than the other one. The reason for this is that an adolescent with higher status probably has more
individuals to choose from in order to establish a friendship. It might be easier for adolescents with higher status to break up friendships when the friends do not behave according to their standards. Thus, it can be argued that the two dimensions described here have an impact on the magnitude of friends’ influence on the adolescent’s drinking behavior. Based on the arguments described above, one can expect both lack of reciprocity and different sociometric status within a present friendship to result in adaptation to the drinking behavior of a unilateral friend or a friend with higher sociometric status.

An ongoing debate in the literature on peer influence is about whether adaptation to peer behavior should be measured by asking for the respondent’s perception of the behavior of peers, or by using peer reports. Bauman and Ennett (1996) argue that studying peer influence by using ratings of adolescents’ friends might be a source of overestimation of peer influence. It can be argued that the perception of a friend’s behavior might be a more substantial influence to an adolescent than actual behavior, but it can be objected that the perception of other people’s behavior might be affected by individual differences between adolescents (Engels et al., 1999). For example individual differences in attribution might bias the perception. When this occurs, it can be adduced that no true friends’ influence is measured, but an individual tendency to rate other people’s behavior in a certain manner. Therefore designs that include both adolescent’s and friends’ self reports are probably the best way to measure peer influence processes.

In this longitudinal two wave study among 12-14-year-old students, we will examine early adolescents’ influence on alcohol consumption while taking aspects of equality in the friendship into account. Data of early adolescents are used, because many of this age group are initiating drinking at this stage and will become regular drinkers soon. Therefore their alcohol consumption is rapidly increasing (e.g. Pape & Hammer, 1996). Another reason to look at data of early adolescents is that drinking considerable amounts at this age is known to be related to problematic drinking and depression later in life (e.g. Chassin & Ritter, 2001). Studying the causes of drinking at this age group might provide valuable insights to prevent problematic behavior in adulthood. A relatively short period of six months between the waves is chosen, to guarantee that a considerable amount of the changes in drinking behavior can be attributed to the best friend at that time. This may be important, because at this age friendships may be subject to change (see Ennett & Bauman, 1994).

In the current study we started analyzing the cross-sectional associations between adolescents and their first nominated friend. Next we measured the influence of the first nominated friend by doing longitudinal analyses. By doing both cross-sectional and longitudinal analyses a comparison can be made between the results and we hope to illustrate the weaknesses of doing cross-sectional research when trying to study influence.

Adolescents whose nominations are not returned (i.e. those with unilateral friendships) and those with lower sociometric status than their friend are expected to be influenced in their drinking behavior to the highest degree. Mutual friends and friends with equal sociometric status are also expected to be affected, but to a modest degree. Adolescents with higher status are expected to be
influenced to a lesser extent. A unilateral friend with a higher status is expected to have the most influence and it will be examined whether the two dimensions of inequality in friendship influencing adolescents will add up or interact.

**Method**

*Sample and Procedure*

For this paper, data of a two-wave longitudinal study among 1589 10-14-year-old adolescents of 11 schools in the Netherlands were used. The first wave (T1) was conducted in November-December 2000 and the second wave (T2) six months later in May-June 2001. Only data of adolescents who were involved in the survey at both waves were used for analysis. A logistic regression analysis was applied to analyze whether respondents who were engaged in both waves differed from those who only engaged in the first wave. No differences were found on sex, age, living situation, education level and drinking behavior. However, more of the respondents who dropped out of the sample were born in countries other than the Netherlands (OR = 1.85, p < .05). These predictor variables explained 8.7% (Cox & Snell R²; p < .01) of the variance in attrition.

All students were in the first grade of secondary education with a total of 80 classes at T1. In the Netherlands, students in the first grade of secondary education move from classroom to classroom during the day, while staying with the same group of students. As a result of this compilation of classes, many students in this age group have their friends within the same class. In this study, not only friends in the same class could be identified, but also those in other classes of the same school. A total of 264 respondents (13.7%) at T1 did not mention any friend at school, or mentioned friends that were not among the other respondents in the sample. They were omitted from the analyses. Of the adolescents who did mention a friend, the majority mentioned a friend in the same school. Only a few adolescents had missings on alcohol consumption in each of the two waves and were omitted from further analyses (8 Ss were removed). Respondents with an extremely high score on intensity of drinking (> 60 glasses of alcohol in the last week; N = 5) were removed from the dataset. Also adolescents without a score on sex or age (N = 32) were excluded. This resulted in a sample of 1280 adolescents for the analyses.

Of the final sample of 1280 adolescents, 584 (45.6%) were boys and 696 were girls. At wave one, their mean age was 12.27 (SD = .49). Most of them (95.5%) were born in the Netherlands and lived with both parents (88.4%), 9.4% of the respondents lived with one parent and 2.2% lived in a household of another structure. The respondents attended schools with a range of education levels, but the largest group (48.3%) attended the first class at secondary education with a possibility to choose between senior general secondary education/ pre-university education after year one.

Questionnaires were administered during school hours in the presence of a teacher. Parents were informed about the aims of the study and given the opportunity to state that they did not want
their child to participate. Some parents approached the institute for additional information, but none of them refused to cooperate. None of the adolescents refused to complete the questionnaire. Non-response only occurred in cases where the adolescent was absent at days of assessment.

In order to open the possibility to link subjects to friends in their school, it was necessary to collect information about the respondent’s identity. Names and class numbers were solicited for this purpose and to prevent reticence completing the questionnaires, strict confidentiality was promised. It was stated that no information about the adolescents’ individual responses was going to be released to people except for the principal researcher. Gift coupons for compact discs were raffled to motivate adolescents and parents to participate in this study.

**Measures**

**Alcohol consumption.** This was assessed by four questions in which respondents were asked to indicate how many glasses of alcohol they had been drinking in the week prior to the test, during weekdays and weekends, and inside and outside home (see Engels, Knibbe & Drop, 1999a). By asking these four specific situations, respondents are forced to actively return to episodes in their memory, which is supposed to increase reliability of response. The sum of these four scores was used to indicate the total number of alcoholic beverages consumed in the past week.

**Best friend.** An adaptation of the format of Ennett and Bauman (1994) to assess peer relations within school settings was employed. Respondents were asked to write down the first name and first letter of the family name of their best friends (with a maximum of five). In contrast to Ennett and Bauman (1994), respondents’ reactions were not restricted to friends at school. Furthermore, respondents had to indicate if the friends were students at the same school they went to. Because all respondents were given a unique number, it was possible to replace the names of the friends who were in the same school by their respondent number. We only focused on friendships at school because friends outside the school context had not been included in the sample. The first friend in the list who could be matched with a number was considered the best friend.

**Reciprocity of best friend.** The data on friendships were analyzed with a preliminary version of the software ‘MAKEDYAD’ (Thissen-Pennings & Bendermacher, 2002a) to determine reciprocity of the first mentioned friend who was at school. Reciprocity was assessed for the first named best friend at school. A friendship was considered to be reciprocal when the respondent’s friend also named the respondent in his or her list of friends. A friendship was considered to be unilateral when a friend did not mention the respondent at all. At T1, 78.3% of the respondents’ best friends reciprocated this friendship by mentioning this adolescent in his or her list of friends (for boys this was 71.5% and for girls 84.1%). Both reciprocal and nonreciprocal friends did not differ from the respondents on alcohol consumption at both waves.

**Sociometric Status Difference.** Respondents were asked to write down the names of the five most and five least popular persons in their class (e.g. Newcomb & Bukowski, 1983). This information was used to calculate the sociometric status of each individual. Using ‘SOCSTAT’
CHAPTER 2 - friend’s drinking and adolescent alcohol consumption

(Thissen-Pennings & Bendermacher, 2002b), the nominations respondents gave to people in their class were transformed into nominations received. The computer program used this information to calculate various scores. For the purpose of this study, the z-score of preference was used. This is a score of the outcome of amount of ‘most popular’ nominations received minus the amount of ‘least popular’ nominations received, after which the score is standardized by class. To indicate the difference in sociometric status between the respondent and the best friend, the scores of these two persons were subtracted. Respondent’s friends had an average score of 0.23 (t = -9.28; \( p < 0.001 \)) on status difference, which means that the friend adolescents chose, on average had a higher status than themselves. There were no significant differences in status between reciprocal and nonreciprocal friends.

**Strategy for analysis**

First, descriptive statistics were calculated for the variables applied in this study. Second, the cross-sectional univariate correlations between drinking behavior of the respondent and that of the best friend the respondent was matched to were calculated at T1 (Pearson correlation coefficients). Third, multivariate analyses were executed to predict drinking behavior of the adolescent at T1. Multiple hierarchical regression analysis was employed. In step 1, the drinking behavior of the best friend, reciprocity of the friendship, sociometric status difference, sex and age were entered. The two-way interactions of friend’s drinking behavior with reciprocity of friendship and friend’s drinking behavior with sociometric status ratio were entered in step 2, followed by the three-way interaction of friend’s drinking behavior with reciprocity of friendship and sociometric status ratio in step 3. The original variables were standardized before interaction terms were calculated (Aiken & West, 1991). Fourth, the longitudinal effect of the friend’s drinking behavior on alcohol consumption of the respondent was analyzed. In these regression analyses, the dependent variable was the respondent’s drinking behavior at T2. At step 1, the respondent’s drinking behavior at T1 was entered in the regression equation, followed by the same three steps applied in the cross-sectional analyses as mentioned above. Hence, in step two, friend’s drinking behavior was entered, together with reciprocity of the friendship, sociometric status difference, sex and age. In step three, the two-way interactions of friend’s drinking behavior, reciprocity of friendship and sociometric status ratio were entered and the three-way interaction of these three variables in step four. In this way, peer drinking can be supposed to be a source of change in drinking pattern (when a significant contribution is found). Additional analyses were conducted for the group with a stable friendship from T1 to T2 and in a dataset with a subgroup of respondents in which no multiple nominations of friends occured. In the analysis using the group with a stable friendship from T1 to T2, the effect of peer selection from T1 to T2 can be isolated (cf. Urberg, Değirmencioğlu & Pilgrim, 1997).
Table 1

Pearson Correlations between Drinking Behaviour (both waves) of Respondent and Best Friend (T1), Friendship Status, Respondents’ Sex and Age.

<table>
<thead>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.99**</td>
<td></td>
<td></td>
<td>-0.03</td>
<td>-0.08**</td>
<td></td>
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<td>Friendship Status</td>
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<tr>
<td>Demographic variables</td>
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</tbody>
</table>

Note. * p <.05; ** p <.01
Results

Descriptive data

At T1, 71.5% of the respondents indicated they had ever been drinking alcohol. This percentage increased to 76.8% at T2. The average age of the first occasion of alcohol consumption of the respondents that ever drank was 9.80 (SD = 2.35). A total of 40.4% of the adolescents that had ever been drinking, had been drinking in the past four weeks at T1, leading to an average weekly consumption of 0.89 (SD = 2.65) glasses of alcohol in the last week. At T2, 53.2% of the respondents that ever drank, had been drinking in the four weeks in advance, leading to an average of 2.16 (SD = 4.98) alcoholic beverages in the last week. Paired samples t-tests show that, at T2, more adolescents had ever been drinking \((t(1258) = 4.97; p < 0.001)\) and drank with a higher intensity \((t(1255) = 8.90; p < 0.001)\) than at T1.

Correlations between model variables at both waves

Table 1 shows the correlations of all relevant model variables. Correlations between respondents’ and friends’ drinking behavior at T1 and T2 are all significant, showing that respondents who drank were more likely to affiliate with other drinking friends than respondents who did not drink. Reciprocity of friendship related to lower alcohol consumption of friends but not of respondents at T1 and to lower alcohol consumption of both respondents and friends at T2. Furthermore, having a higher status friend was associated with a lower intensity of drinking by the respondent and a higher intensity of drinking by the friend. Having a higher status friend also made it less likely that the friendship was reciprocal. Boys were drinking more than girls at both waves, while girls more often had a reciprocal best friend. Finally, older adolescents drank more intensively at both waves and had friends who also drank more intensively.

Cross-sectional regression analyses on best friends’ drinking, reciprocity of friendship and sociometric status, and adolescent drinking behavior.

Intensity of friend’s drinking was connected to respondent’s intensity of drinking at T1 (Table 2). Having a higher status, being a boy and being older also showed a main effect in intensity of drinking at T1. Two-way interaction effects were found for intensity of friend’s drinking with reciprocity of the friendship and for intensity of friend’s drinking with sociometric status difference. Plotting the means of alcohol consumption for adolescents with friend’s drinking (half a standard deviation below and above respondent’s drinking) and being reciprocal and nonreciprocal revealed that only for reciprocal friends, the alcohol consumption was associated with that of the respondent. Plotting the means to discriminate friend’s drinking for status differences instead of reciprocity, revealed that only lower status friend’s drinking behavior was associated with the adolescents’ intensity of drinking. Also the three-way interaction, of intensity of friend’s drinking with reciprocity and status difference reached significance. The plot of each group’s mean exposed that lower status,
Table 2
Hierarchical Regression predicting Intensity of Drinking at T1 Cross-sectionally.

<table>
<thead>
<tr>
<th>Intensity Drinking Adolescent T1</th>
<th>Beta</th>
<th>Total R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Friend T1</td>
<td>.17**</td>
<td></td>
</tr>
<tr>
<td>Reciprocity</td>
<td>-.03</td>
<td></td>
</tr>
<tr>
<td>SMS Difference</td>
<td>-.10**</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-.10**</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.06*</td>
<td>.06**</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Friend T1</td>
<td>.18**</td>
<td></td>
</tr>
<tr>
<td>Reciprocity</td>
<td>-.02</td>
<td></td>
</tr>
<tr>
<td>SMS Difference</td>
<td>-.09**</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-.10**</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.06*</td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Friend T1 x Reciprocity</td>
<td>.16**</td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Friend T1 x SMS Diff</td>
<td>-.15**</td>
<td></td>
</tr>
<tr>
<td>Reciprocity x SMS Difference</td>
<td>-.03</td>
<td>.09**</td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Friend T1</td>
<td>.19**</td>
<td></td>
</tr>
<tr>
<td>Reciprocity</td>
<td>-.03</td>
<td></td>
</tr>
<tr>
<td>SMS Difference</td>
<td>-.09**</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-.09**</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.06*</td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Friend T1 x Reciprocity</td>
<td>.17**</td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Friend T1 x SMS Diff</td>
<td>-.14**</td>
<td></td>
</tr>
<tr>
<td>Reciprocity x SMS Difference</td>
<td>-.02</td>
<td></td>
</tr>
<tr>
<td>Int  Friend T1 x Reciprocity x SMS Diff</td>
<td>-.10**</td>
<td>.10**</td>
</tr>
</tbody>
</table>

Note. * p < .05; ** p < .01. N = 1251. The $R^2$ indicates the total variance accounted for after each step. Asterisks indicate a significant $R^2$ change in comparison to the step in advance.

Reciprocal friends had the strongest association between drinking behavior of the respondent and the best friend (see Figure 1).

Longitudinal regression analyses on adolescent drinking, best friend’s drinking, reciprocity of friendship and sociometric status, and successive drinking behavior.

A longitudinal hierarchical regression analysis (Table 3) showed that intensity of drinking at T1 was strongly associated with drinking at T2. Intensity of drinking at T1 accounted for a large part of the variance in drinking at T2. By entering prior drinking behavior in the first step of the regression equation, all following steps can be assumed to indicate changes in drinking behavior from T1 to T2. Furthermore, best friend’s drinking at T1 and the respondent’s sex predicted changes in drinking behavior. When the adolescent’s friend had been drinking intensively, it was more likely that the respondent also drank intensively at T2. Also being a boy increased the likelihood of drinking larger quantities. No two-way interactions were found between intensity of friend’s drinking, reciprocity of friendship and sociometric status difference, but the three-way interaction of these three variables predicting drinking at T2 reached significance. To be able to find out the nature of this interaction, a measure was calculated to plot differences between subgroups of teenagers. Because entering drinking
CHAPTER 2 - friend's drinking and adolescent alcohol consumption

Intensity drinking respondent at T1

<table>
<thead>
<tr>
<th>Status Friendship (T1)</th>
<th>Number of alcoholic drinks per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>unilateral friend with lower status</td>
<td>0</td>
</tr>
<tr>
<td>reciprocal friend with lower status</td>
<td>0,5</td>
</tr>
<tr>
<td>unilateral friend with higher status</td>
<td>1</td>
</tr>
<tr>
<td>reciprocal friend with higher status</td>
<td>1,5</td>
</tr>
</tbody>
</table>

Figure 1. Average respondent’s intensity of drinking at T1.

Changes intensity drinking respondent from T1 to T2

<table>
<thead>
<tr>
<th>Status Friendship (T1)</th>
<th>Change in number of alcoholic drinks per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>unilateral friend with lower status</td>
<td>0</td>
</tr>
<tr>
<td>reciprocal friend with lower status</td>
<td>0,5</td>
</tr>
<tr>
<td>unilateral friend with higher status</td>
<td>1</td>
</tr>
<tr>
<td>reciprocal friend with higher status</td>
<td>1,5</td>
</tr>
</tbody>
</table>

Figure 2. Average change in respondent’s intensity of drinking from T1 to T2.


## Table 3

*Hierarchical Regression Longitudinally Predicting Intensity of Drinking at T2.*

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>Sample with Stable Friendship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intensity T2</td>
<td>Intensity T2</td>
</tr>
<tr>
<td></td>
<td>Beta</td>
<td>R²</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Respondent T1</td>
<td>.40**</td>
<td>.16**</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Respondent T1</td>
<td>.37**</td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Friend T1</td>
<td>.13**</td>
<td></td>
</tr>
<tr>
<td>Reciprocity</td>
<td>-.01</td>
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<tr>
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<tr>
<td>Sex</td>
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</tr>
<tr>
<td>Age</td>
<td>.05</td>
<td>.19**</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Respondent T1</td>
<td>.37**</td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Friend T1</td>
<td>.12**</td>
<td></td>
</tr>
<tr>
<td>Reciprocity</td>
<td>-.01</td>
<td></td>
</tr>
<tr>
<td>SMS Difference</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-.06*</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>.05</td>
<td>.02</td>
</tr>
<tr>
<td>Intensity Drinking Friend T1 x Reciprocity</td>
<td>-.01</td>
<td></td>
</tr>
<tr>
<td>Int Drinking Friend T1 x SMS Diff</td>
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<td></td>
</tr>
<tr>
<td>Reciprocity x SMS Difference</td>
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<td>.19</td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
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<td></td>
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<tr>
<td>Intensity Drinking Respondent T1</td>
<td>.36**</td>
<td></td>
</tr>
<tr>
<td>Intensity Drinking Friend T1</td>
<td>.14**</td>
<td></td>
</tr>
<tr>
<td>Reciprocity</td>
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</tr>
<tr>
<td>SMS Difference</td>
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<tr>
<td>Sex</td>
<td>-.05*</td>
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<tr>
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<tr>
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</tr>
<tr>
<td>Int Drinking Friend T1 x Rec x SMS Diff</td>
<td>-.14**</td>
<td>.20**</td>
</tr>
</tbody>
</table>

Note. * p <.05; ** p <.01. N (total sample) = 1251. N (sample with stable friendship) = 598. The $R^2$ indicates the total variance accounted for after each step. Asterisks indicate a significant $R^2$ change in comparison to the step in advance.

Behavior at step 1 in the regression equation had as a function to control for previous drinking and analyze changes, this measure was composed by subtracting the amount of drinking of the respondent at T1 from the amount of drinking of the respondent at T2. A positive score on this measure indicates an increase in intensity of drinking from T1 to T2. The plot of means of change in drinking from T1 to T2 (containing eight groups of respondents whose friend scored at least half a standard deviation below or above respondent’s drinking, unilateral or reciprocal and higher or lower status friends) showed, that nonreciprocal friends with a higher status had the highest impact on adaptation of intensity of drinking of the respondent (see Figure 2).
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The same longitudinal hierarchical regression analyses were also executed for the group of adolescents who had the same best friend at T1 and T2. For these adolescents (n = 734; 46.3%), drinking behavior at T1 did not predict drinking behavior at T2 as strongly as it did for the total group. It appears that youngsters with a stable friendship are changing their drinking behavior more strongly than the others during this period of life. Just like in the total group, the best friend’s drinking behavior at T1 also predicted the adolescent’s drinking at T2, but sex did not.

In addition, two-way interactions of friend’s drinking with social status and reciprocity of friendship were found, and no three-way interaction with friend’s drinking, social status and reciprocity of friendship. Plotting the means of change of alcohol consumption of four groups of respondents, with friends scoring below or above average on drinking, and being unilateral or reciprocal showed the same picture as for the total group, namely that the drinking of unilateral friends had the largest influence on the respondent’s drinking, together with the drinking of higher status friends.

Discussion

In many studies it has been found that adolescent’s alcohol consumption is affected by the alcohol consumption of peers and friends (e.g., Engels et al., 1999; Schulenberg et al., 1999; Swadi, 1999; Urberg et al., 1997, 2003). These findings are replicated in this study. The alcohol consumption of friends appears to be associated with the alcohol consumption of youngsters at one moment in time and also an effect from the friend’s alcohol consumption is found on the respondent’s consumption six months later. This implies that similarities in drinking behavior exist in friendship pairs, and that they increase in existing friendship pairs (see also Gaughan (1999)). Besides these findings, our study differentiates the general finding that adolescents are influenced by their best friend’s drinking. It appears that friend’s influence can not be perceived as a one-dimensional force that affects the drinking behavior of a youngster, but that the magnitude of influence that takes place is dependent on the nature of the friendship. In the present study we looked at two possible dimensions on which friendship characteristics may differ.

The first dimension is differences between the friends in sociometric status in their school class. Cross-sectionally, the highest association was found between the drinking behavior of the respondent with the drinking of a best friend with a lower sociometric status than the respondent. When looking at the change of alcohol consumption over time, the drinking behavior of the best friend with a higher status turned out to be most influential. Apparently, changing drinking behavior towards that of a friend with higher status occurs more often than towards the drinking of a lower status friend. A possible explanation for this finding is that lower status individuals in a friendship are aware of the difference in sociometric status and anticipate on the higher status of the friend. This status difference is a possible ground for the higher status friend to break up the friendship and the lower status friend
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might try to prevent this break-up by showing similar drinking behavior. In other words, similarity in behavior may be a reason for individuals to become and remain friends.

The second friendship dimension we examined is reciprocity of the friendship. Cross-sectionally, a stronger relation was found between the drinking behavior of the friend and the adolescent in a reciprocal friendship, but when looking at changes of alcohol consumption over a half-year period, change turns out to be the case mainly towards the drinking behavior of the unilateral friend, instead of the reciprocal friend. The same process we found in friends with status differences might be responsible for this effect. Copying behavior to improve chances to become friends might be the ground for adaptation of drinking behavior to the drinking of the unilateral friend (see Aloise-Young et al., 1994). Showing similar (drinking) behavior to a unilateral friend might be a reason for this friend to consider becoming friends.

Perhaps a similar cause is responsible for the difference between cross-sectional and longitudinal associations. Cross-sectional analyses show results that only reflect a current situation, the status quo in a friendship. No history or development of aspects, such as individual drinking behavior, friendships or friend’s drinking habits, are taken into account. It seems reasonable to believe that in cross-sectional analyses, the strongest associations are found between drinking behavior of friends who have already had a history of influence processes at some moment in the past. This way it seems logical that reciprocal friends do not have as much influence as unilateral friends, as we found in the longitudinal analyses. Even though the reciprocal friends might spend a lot of time together, their friendship is established and their behavior may already be very similar and no more subject to mutual influence. If their drinking behavior is different, the friends’ bonds are probably strong enough to resist the implicit or explicit pressure to adjust drinking behavior. The finding that drinking behavior of respondents in a stable friendship are more subject to change than that of subjects in unstable friendships seems to be inconsistent with this line of reasoning, but does not have to be true when taking into account that stable friendships are not necessarily reciprocal friendships (the Pearson correlation is only .14) and that the larger change in drinking within stable friendships may be the result of other causes than the friend’s drinking. Little adjustment towards friend’s behavior in an established friendship seems like a safe option, as Aloise-Young, Graham and Hansen (1994) found that showing another smoking pattern than reciprocal friends usually is no reason to break up the friendship.

Explaining why cross-sectional and longitudinal analyses show an opposite pattern for the effect of social status on associations in drinking between teenagers and their best friend can not be done as straightforward as for reciprocity. We could not come up with an appealing explanation for why adolescents’ drinking is more similar to the drinking of their lower status friends than for friends with a higher status. Perhaps lower status friends are appreciated for their correspondence on drinking behavior, possibly together with similarities in other behaviors, while higher status friends are nominated because of the draw that comes from their status and not because of similarities in
behavior. But, again, higher status friends have the largest impact on changes in drinking. Perhaps future studies may provide more insight in the causes of the higher similarity in drinking between adolescents and their friends with lower status.

By doing both cross-sectional and longitudinal analyses, we managed to reveal that through applying cross-sectional analyses, no clear image of the process of influence can be achieved. Not only do cross-sectional analyses confound selection and influence, but they also lead to misinterpretations of the effect of aspects that may differentiate the amount of influence exercised. In this paper, the effect of sociometric status differences between friends and reciprocity of friendship on the amount of influence on alcohol consumption would be completely misinterpreted. We assume that comparable errors will come up when doing cross-sectional analyses with other moderating factors.

It is very likely that also other friendship dimensions will play a role in the amount of influence exerted. One can, for example, think of the duration of the friendship, the combination of sexes of the adolescent and the friend, or the amount of time spent together, and certainly other friendship dimensions can be conceived (see Hartup, 1997). But not only friendship dimensions may play a role in the impact of peer socialization, factors concerning other aspects than the friendship itself may have impact on the process of influence (Urberg et al., 2003). On a smaller scale one can think of sociability, age, social dominance and need for affiliation. These personal characteristics may play a role in individuals’ susceptibility to social pressure. For example, it is unlikely that someone in his thirties will adapt his behavior to teenagers, except perhaps when this person tries to hold up a young image and seeks for acceptance of these teenagers. On a larger scale, aspects like the size of the friendship group, drinking settings visited by the peer group or group cohesion may have an impact on influence processes. For example, groups consisting of at least four boys and no girls are found to have the fastest drinking rate (Van de Goor, 1990) as compared to groups of mixed gender or female peer groups. Also interactions may take place between aspects on different scales. It is not imaginary that e.g. a friend with higher status might have less influence on the drinking behavior of an individual, when they are part of a large group going out, in comparison with the situation where the two friends have a night out together. A theoretical approach is warranted in which individual and group characteristics are included as predictors of individual susceptibility to peer influences (see Urberg et al., 2003).

A difficult issue in doing longitudinal research on peer influence processes is the time interval that is chosen between the waves. Using short time-intervals means running the risk that little change in drinking behavior will be found, which leaves little variance in the outcome measure for explanatory factors to predict (Engels, Knibbe & Drop, 1999a). Using longer time intervals, on the other hand, makes it more difficult to trace whether friends’ behaviors cause changes in individual behavior. In particular, in early adolescence, a period when adolescents undergo a transition from primary school to secondary education and substantial changes in peer group constellation and chumship are apparent (see Finkenauer, Engels, Meeus & Oosterwegel, 2002; Poulin, 2002). This
might make it necessary to check for some aspects in the situation at the latter wave. For instance, using a long time interval for measuring influence of the friend’s drinking behavior in the present study might make the influence of this friend doubtful, considering that the friendship might be terminated shortly after the first measurement. Therefore it seems necessary to ensure that this friendship is still existent at the second wave when using a long time interval. We assume, that by using a half-year interval between the waves, we found a good balance, preventing disadvantages of too short or too long time intervals.

In the current study, we concentrated on adolescents in the age group from 12 to 14. This was done because at this age many young people initiate drinking and peer influence may be an important mediator in this process. One may wonder if the same results would have been found when another age group was studied. It is known that especially during this period of life, people are extremely sensitive to other persons’ opinions about their behavior (Finkenauer et al., 2002). Still, it is possible that effects of peer influences in older adolescents may even be stronger, because in this group drinking becomes more regular and consequently a larger variation in alcohol consumption will be found, which may provide stronger results. Besides this, older adolescents are likely to be more autonomous, which may result in less impact from parents’ regulations and monitoring on the drinking behavior of the adolescents (Cottrell, Li, Harris, D’Allessandri, Atkins, Richardson & Stanton, 2003). This decrease of impact will possibly make way for an increase in peer socialization and as a result more influence from friends may take place.

In this paper, we suggested that adolescents might perceive change of drinking behavior as an instrument to obtain reciprocal friendships. One may wonder if this instrument is effective. Aloise-Young, Graham and Hansen (1994) showed that those adolescents who adapted their smoking behavior toward the behavior of the desired friend were more likely to be reciprocated as a friend one year later. Bot and Engels (in preparation) scrutinized whether this process also takes place in drinking behavior. They found that differences in intensity of drinking was no ground for breaking up a friendship, but differences in frequency of drinking was. Both similarity and adaptation to the consumption of the best friend over time did not predict reciprocity of friendship for former unilateral and reciprocal friends.

It is peculiar to perceive that adolescents seem to change their intensity of drinking towards that of their best friend, without this change being helpful in establishing and keeping reciprocal friendships. One can conclude that construction of friendships is perhaps not the driving force behind copying behavior, but socialization as it is. The behavior of the best friend may be considered to be the norm and may be modeled, without fear for exclusion or strategy for inclusion as a cause. Another possibility is that adolescents assume changes in drinking to be a helpful technique in obtaining reciprocal friendships. Whether adolescents are aware of the possible pointlessness of this behavior or assume it will be helpful is a question yet to be answered.

Limitations
Despite the efforts we made to make this study a valuable contribution to the literature on peer influence on alcohol consumption, some limitations have to be mentioned. To begin with, the variance in alcohol consumption accounted for by the drinking behaviour of the best friend is modest. However, by doing longitudinal analyses and correcting for earlier behaviour, the found variance may safely be interpreted as the result of friend’s drinking and not the result of some artefact. But, it remains useful to stay receptive to other factors that may influence youngsters’ alcohol consumption.

Many adolescents in this study still were abstainers or sporadic users of alcohol during the measurements of this study. This could have influenced the results. Many of the changes in alcohol consumption probably were transformations from abstination to use. One can argue that this might be a different process than changing from drinking infrequently to drinking regularly.

Another possible limitation of this study was that only the alcohol consumption of the best friend in school was available for analysis. The design of our study did not permit us to collect data of friends outside school. This might lead to an underestimation of the influence of friends because some studies provided preliminary evidence that friends in out-of-school contexts are more strongly affecting deviant behaviors of adolescents than friend at school (Mahoney & Stattin, 2000). On the other hand, friends in different classes, but within the same school could be traced and, at the age of our respondents, adolescents have the majority of their friends in school (Ennett & Bauman, 1994).

In future studies, it might be interesting to look at influence processes while they occur. Asking adolescents to indicate how much they have been drinking in the past week namely does not give a good insight in the situations where the influence occurs. It makes quiet a difference whether an adolescent has e.g. 14 alcoholic consumptions per week by drinking two consumptions a day in the presence of the parents or as a consequence of going out heavily one night a week with a group of friends.

In sum, this study showed that the nature and quality of social relations, such as friendship characteristics, do matter when it comes to social influence on drinking behavior. This is an important detail to take into account when doing research and when developing interventions. It places attention to the need to concentrate future research on the individual and group characteristics that place adolescents at risk for peer influence processes.
References


CHAPTER 2 - friend's drinking and adolescent alcohol consumption
CHAPTER 3

where it’s at! the role of best friends and peer group members in young adults’ alcohol use

Based on:
CHAPTER 3 - the role of best friends and peer group members

Abstract

Aim: We examined the hypothesis (H₀) that best friends and members from a broader peer group would not differ in the amount of influence they have on young adults’ alcohol consumption, and (H₁) that what counts would be the mere presence of drinking peers in a given context - irrespective of the type of relationship such peers would have with the target young adult.

Methods: Data were used from a naturalistic observation study that was conducted in a ‘bar lab’ among 221 young adults aged 18-25 years. Results: Both hierarchical and multilevel regression analyses showed that only group effects (i.e., average group levels of alcohol consumption) explained young adults’ drinking behavior in the bar lab. When taking into account these group effects, the best friends’ questionnaire-assessed drinking levels and actual alcohol consumption in the bar lab were non-significant predictors. Conclusions: Best friends are no more influential than other peers for young adults’ alcohol use in real-life drinking contexts. Discussion focuses on the specific processes through which best friends or other peer group members exert an influence on young adults’ alcohol consumption.
CHAPTER 3 - the role of best friends and peer group members

Introduction

In general, peers are seen as the most consistent and strongest factor in the initiation and maintenance of alcohol use in adolescents and young adults (see Petraitis et al., 1995; Bauman and Ennett, 1996). However, the concept of ‘peer group’ encompasses a wide variety of different types of relationships with peers. For example, youths have reciprocal chumships or best friendships - largely situated within broader cliques or friendship groups (Brown, 1990; Urberg et al., 1995) - but also participate in broader peer networks or ‘social crowds’. Many previous studies have relied on questionnaire data about the role of young adults’ exclusive friendships in the development of alcohol use (Engels et al., 1999; Andrews et al., 2002; Bot et al., 2005). This implicitly suggests that the best friend’s general frequency or intensity of alcohol use would be a major predictor of youths’ own drinking levels - irrespective of the specific environment one is in, and the crowd of peers that are present in that environment. In contrast, we aim to examine an alternative hypothesis, which holds that best friends have no more impact on young adults’ alcohol use than other peers, and that what counts is the mere presence of ‘people who drink’ in a given context (e.g., bars or discos) and how much these people drink.

Dyadic Closeness: Unique Impact of Best Friends’ Alcohol Use?

High similarities in drinking behaviors in peer groups have been found (e.g., Bogenschneider et al., 1998; Prinstein et al., 2001). Studies with longitudinal designs conducted in the seventies (Cohen, 1977; Kandel, 1978) and more recently in the nineties (Ennett and Bauman, 1994; Aloise-Young et al., 1996; Urberg et al., 1997) showed that similarities in alcohol use are caused in part by individuals’ tendency to select friends that resemble themselves, but are also determined by mutual influence processes of influence in friendship dyads. In studying the homogeneity of alcohol use across youths and their peers, many scholars have assumed that especially the best friend is an important socializing agent (Morgan and Grube, 1991; Engels et al., 1997). This assumption is based on social learning theory, which emphasizes that a prerequisite for successful modelling behavior is that a model is liked or valued (Bandura and Walters, 1963). In addition, because of the intimate disclosures and mutual reciprocity in best friendships, specific norms and behaviors - amongst other things about alcohol use - may be transmitted most easily (Younnis and Smollar, 1985). Hence, in close dyadic friendships one would expect stronger linkages between young adults’ alcohol use than in other types of peer relationships.

Several previous studies have examined the relative importance of best friends versus the broader peer network in predicting individuals’ alcohol use. Urberg et al. (1997) found that best
friends’ alcohol use was linked to initiation and persistence of alcohol use in adolescents, but that alcohol consumption of close friends as well as in the friendship group was related to drinking to intoxication. Other research focusing on multi-informant data and reciprocal friendships (Bot et al., 2005), found that young adults’ alcohol consumption was related to the highest degree with peers who were nominated as peers with whom one would like to be friends. Unfortunately, the data on which the conclusions mentioned above are based, were gathered in settings that do not resemble the situations in which young adults normally drink, such as bars and discos. This raises the question whether these findings are ecologically valid. Is it realistic to assume that (global representations of) the best friends’ average level of weekly alcohol consumption - which is what is recorded in many surveys - exerts an effect on young adults when they are in an everyday drinking context such as a bar or disco, surrounded by other peers?

**Group Effects: The Importance of the Peer ‘Setting’**

Although individuals’ most exclusive peer relationships may be important, one may also argue that patterns of alcohol use as manifested in the peer group may be highly salient during adolescence and young adulthood (Oetting and Beauvais, 1987; Urberg et al., 1997). Specifically, alcohol consumption may be an important element in social positioning in peer groups (i.e., drinking alcohol is associated with stereotype images of being cool and personal enhancement by adolescents - see Gerrard et al., 2002; Spijkerman et al., 2004). Although most previous studies have relied on survey designs to examine associations between alcohol use of adolescents and young adults, systematic observations may provide a more detailed illustration of these processes. Until now, however, not many studies have been performed in which youths’ drinking behavior was observed in a real-life context. The few studies that have been done, though, have provided evidence in favor of ‘social facilitation’ processes - with higher levels of (young) adult alcohol consumption being dependent on the number of people present in a group, for instance during mealtimes (Redd and De Castro, 1992) or in college pubs (Rosenbluth et al., 1978). These studies made clear, also, that sex and the sex composition of groups were major predictors of alcohol intake - males drink more and faster than females.

More recent studies were conducted in the nineties, and basically replicated these findings (Van de Goor et al., 1990; Knibbe et al., 1993) showing that especially larger young adult groups of mostly male composition were high on alcohol consumption. Overall, the conclusion seems justified that insofar previous research has focused on real-life drinking contexts, no assessment has been made of the relative importance of young adults’ best friends versus the broader peer setting. In addition, previous studies have not assessed the role of the number of friends that might be present in a specific alcohol-related group setting. According to Latané (1981) the
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impact of a social force in a situation depends on, among other things, how close this force is to the target in space or time. We may assume that with a higher proportion of strangers present in a peer group, young adults will be more likely to associate closely with their best friend. In relatively ‘strange’ peer settings, then, young adults’ alcohol consumption may be correlated more strongly with their best friends’ level of alcohol use, as compared with peer settings in which more friends or relatives are present. Despite this possible moderator effect, however, we would expect that a possible impact of best friends in peer settings would be of relatively limited strength as compared to that of the peer group.

The Present Study

The present study was characterized by a multi-informant (i.e., self-reports and best friend-reports) and multi-method (i.e., survey and observations) design. The main research question of the present study was: ‘What is the relative importance of best friends’ alcohol use versus general levels of alcohol use in the peer setting for predicting young adults’ alcohol use in a real-life drinking context?’ Our hypothesis was that group effects - that is, the mere presence of peers who drink in a given context and how much these peers drink - would be the most important predictor, and that best friends’ alcohol use would be relatively unimportant. If that would be true, the dyadic closeness-hypothesis that modelling behavior is more likely to occur based on the behavior of a best friend (i.e., a liked and highly valued model) would be rendered obsolete. But why would that be important to know? Finding out that not best friends but rather group processes would be the most important predictor of young adults’ alcohol use, would argue for a theoretical shift away from thinking of influence as being strongest in the most intimate peer relationships. Also, it would emphasize the need for a different empirical paradigm, relying more on in vivo behavioral observations than on context-independent, global assessments of general attitudes and behavioral tendencies.

Methods

Participants and Procedure

Participants were 238 young adults who volunteered to participate in a study on ‘the effects of alcohol on group discussions and judgements’. Actually, this was a cover-up to avoid participants becoming aware of the actual aim of the study, which was to examine group processes in alcohol consumption in an ad libidum drinking setting. Notably, this type of procedure is employed in many studies on modelling effects on alcohol use (see review Quigley & Collins, 1999). The participants entered our laboratory setting as a group: we asked target undergraduate students to
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invite 6 to 8 friends to become involved in our research project. In this way, 30 peer groups were enrolled in the study. The majority of these peer groups \((n = 27)\) consisted of 8 persons. A total of 128 men (54%) and 110 women (46%) participated, ranging in age from 18 to 28 years old. Two-hundred-and-three (85%) participants had at least finished pre-university education, which indicates that this study involved participants with a relatively high educational level. Fifty participants (21%) indicated to live with their parents or other caretakers, whereas the others indicated to either live alone, with a partner or a friend. The constellation of the peer groups differed from exclusively male (7%) and exclusively female (7%) to mixed gender (86%).

The bar lab at the Radboud University in Nijmegen was situated in a room furnished as an ordinary small pub, with a bar and stools, tables and chairs, and indoor games like table soccer and billiards, and a TV/video. During the sessions popular music was broadcasted. The volume and type of music were equal across the groups. Participants were told that the bar room was hired from the faculty, and was normally used for celebrations of university staff members. After the participants had entered the bar lab, the procedure of the study was explained and they were asked to fill out a questionnaire about drinking patterns, alcohol expectancies, friendships, and types of relationship within the group. On average, this took participants about 40 minutes. Next, they evaluated 10 persons by pictures shown on the TV screen (i.e., writing down whether they thought these persons were attractive and intelligent, after which they had 30 seconds for each picture to discuss their opinions with the other group members). This task was constructed to be undemanding for participants, and because their judgements were asked it was impossible for them to give ‘incorrect’ answers. Thus, alcohol consumption would not drop as a result of an urge to perform well.

During the completion of the questionnaire and the group discussions, non-alcoholic drinks were offered. After completing the discussions, which lasted for about 10 minutes, the participants were given a 50 to 55 minutes ‘time-out’ which was to be spent in the bar lab. They could play some of the available games, watch TV, or have conversations. The participants were told that they could order a drink at the bar themselves, and that the bartender would not ask them whether they would like to have something to drink, as this would burden him unnecessarily – and it would be unethical for researchers to push the participants towards drinking. Soft alcoholic beverages (i.e., beer and wine) and non-alcoholic drinks were available and were for free. Notably, soft alcoholic drinks in the Netherlands are relatively cheap (in ordinary bars or restaurants, the price of a \(\frac{1}{4}\) centilitre beer does not exceed 3 euros). This implies that offering drinks for free does not encourage excess drinking for the majority of Dutch youths. Nuts and chips were offered as well. After the 50 to 55 minutes time-out period, a second task similar – but
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with different pictures – to the first one was executed. Afterwards, the participants went home in taxis. They received 30 euros a group for their participation.

During the 2 hour sessions, video and audio recordings were made. Two cameras were operated (one flexible camera with zoom lens and one steady camera), hidden in corners of the bar lab. Participants were told that they would be observed, and all gave their written permission for the use of these data. Whenever participants asked whether they would also be observed during the time-out period, this was affirmed and explained by saying this was done in order to assess the total amount people drank, as this was important to assess the expected alcohol effect on the second task. We also stressed that they were not obliged to drink alcohol, because abstainers or light drinkers were also required for our study. Pilot studies were conducted to verify the credibility of the setting and procedure. It was clear that participants strongly endorsed the credibility of the setting; not one of the 32 participants in the pilot studies guessed the actual aim of the study (for more information see Bot et al., 2005). Notably, the research proposal had been approved and granted by the Dutch Foundation for Scientific Research. The national medical ethical committee (CCMO Arnhem-Nijmegen) approved of the protocols for our study. Debriefing of participants was done after the second assessment.

Observations: Number of consumptions. We counted the number of drinks participants consumed during the time-out period in the bar lab. To assess the amount of alcohol consumed by each participant, their recordings were observed one by one. In our study we used glasses that were smaller than standard glasses. In all sessions the same glasses were used and filled to the same level. The contents of beer glasses were on average 160 ml and the contents of wine glasses 110 ml. The beer (lager) we used in our study contained 5% alcohol, which means that a glass of beer contained on average 8 ml pure alcohol. The wines we offered contained from 11% to 12% alcohol, so a glass of wine contained from 12.1 ml to 13.2 ml pure alcohol. We divided the number of glasses consumed beer by a factor 1.5, so that in our measure of observed alcohol use one glass of beer was the equivalent of one standard alcoholic beverage. If participants had not finished their drinks at the end of the session, we subtracted the rest volume from their total consumption. In pilot sessions, the number of drinks was counted independently by several trained observers, who scored a single measures-intraclass correlation of 0.90 (average measures: 0.95). This relatively high level of agreement, together with a discussion about the differences in observers’ counts, made us decide to allow single counts as alcohol use measure.

Questionnaires: Young Adults’ Alcohol Use. All participants were asked to fill in how many drinks they normally would drink in one hour when going out (e.g., pub or discotheque). They
could provide answers for the number of alcoholic and non-alcoholic drinks. We assessed the frequency of drinking by asking about how often participants had drunk in nine specific settings in the past 4 weeks (Engels et al., 1999). The following settings were included: parental home, own home, friend’s home, party, youth/student organization, sport canteen, disco, music festival or rave, and café. The responses ranged from 1 - never to 6 - every day. The overall mean score over these nine settings was calculated and, due to skewness of the frequency of drinking variables, scores of the total scale were log-transformed.

**Questionnaires: Best Friends’ Frequency and Intensity of Alcohol Use.** An adaptation of the format of Ennett and Bauman (1994) was used to assess the frequency of alcohol consumption by young adults, and by their best friends and partners, over the past 4 weeks. Participants were asked to write down the names of their 5 best friends, and for each of these persons were asked to report their frequency of alcohol consumption. Responses ranged from 1 - have not used alcohol to 6 – 5 or more days a week. Although at first we had decided that whenever participants would not have provided us with an entry for a first-best friend, we would use their entry for a second-best friend - or, in the cases this entry was missing too - the entry for a third-best friend (etcetera), this strategy was superfluous as a total of 211 (95%) participants in the sample indicated to have a best friend. This measure thus reflects participants’ representation of their best friends’ average frequency and intensity of alcohol use. In some instances (n = 68), where the best friend was present during the bar lab session, of course this measure reflects that specific best friend’s self-report on alcohol use.

**Strategy of Analyses**

Data from the questionnaires were entered in SPSS 12.0. Video and audio recordings were coded in Observer 4.1 (Noldus BV, Wageningen). We did not code behaviors during the discussion tasks but only coded behaviors manifested in the break. We were able not only to assess how many (alcoholic) beverages each individual consumed, but also when, in what order, with whom and during what activity. Five trained research assistants conducted the coding. For the purposes of the present paper, we only focused on the number of alcoholic drinks consumed. Two out of the 30 groups were left out of further analyses; one because of technical problems and another because the members of this group decided to indulge in a drinking game during the time-out period. Naturally, in this latter group individual drinking behavior could not be predicted by explanatory variables such as previous drinking levels or expectancies. It should be stressed that in none of the other 28 groups, drinking games had been played.

Participants’ observed drinking levels were found to be strongly dependent on the specific peer group they were in, as was reflected by an intra-class correlation of .45 (p < .001). Therefore,
the observational data were analysed using multilevel analysis (MLwiN 1.1; Goldstein, 1995). We controlled for gender and level of familiarity (the proportion of friends present in the groups) in these analyses. Next, we incorporated the number of alcoholic beverages consumed and the frequency of the best friends’ alcohol use - based on data both from questionnaires and observations - as predictors. Finally, a ‘peer group average’ was entered as predictor in the multilevel model. We also incorporated interaction terms for these three peer-variables with gender and level of familiarity. We estimated the deviance (IGLS, see Goldstein, 1995) of the intercept-only model, and then computed the models containing the variables we aimed to test. Least significant predictors in the model were omitted stepwise until the deletion of variables led to a significant increase in the deviance of our model. We tested both fixed and random effects.

The fixed effects are the regression weights of the independent variables, and the random effects indicate the variance in the regression weights between groups.

**Results**

In total, 211 (95%) youths in the sample indicated to have a best friend, and of this group 68 participants (32%) had brought the best friend with them to the bar lab. Participants’ reports for their own and their best friends’ drinking levels are presented in Table 1. Outcomes of a one-way

<table>
<thead>
<tr>
<th>Table 1</th>
<th>ANOVA’s: Barlab and Questionnaire Data on Alcohol Consumption.</th>
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<tbody>
<tr>
<td></td>
<td><strong>Gender</strong></td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td><strong>Questionnaire Data</strong></td>
<td></td>
</tr>
<tr>
<td>PA: Frequency</td>
<td>2,04 (0,46)</td>
</tr>
<tr>
<td>PA: Weekly Recall</td>
<td>16,78 (14,56)</td>
</tr>
<tr>
<td>BF: Frequency</td>
<td>3,17 (0,92)</td>
</tr>
<tr>
<td>BF: Weekly Recall</td>
<td>15,17 (12,41)</td>
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<tr>
<td><strong>Barlab Data</strong></td>
<td></td>
</tr>
<tr>
<td>PA Alcohol Use</td>
<td>2,75 (1,42)</td>
</tr>
<tr>
<td>BF Alcohol Use</td>
<td>3,11 (1,52)</td>
</tr>
<tr>
<td>Peer Group Average</td>
<td>2,75 (1,06)</td>
</tr>
</tbody>
</table>

*Note. PA = participant; BF = participants’ best friend; p ≤ .05; p ≤ .01; p ≤ .001 (asterisks point to outcomes of ANOVA F-tests)*
ANOVA demonstrated that males reported to drink more frequently than females \([F(1, 212) = 20.17, p < .001]\) and that males had a higher weekly recall of alcohol use than females also \([F(1, 220) = 31.19, p < .001]\). In addition, males reported higher levels of alcohol consumption for their best friend than females \([\text{frequency: } F(1, 211) = 29.06, p < .001; \text{weekly recall: } F(1, 210) = 37.92, p < .001]\). With regard to participants’ alcohol consumption in the bar lab we observed that on average, group members drank between 2 and 3 alcoholic beverages during a session (i.e., group alcohol use). The significant difference \([F(1, 220) = 37.12, p < .001]\) between males and females indicates that if a male participated in a session, group average was more likely to be higher than when a female participated in a session. Finally, gender differences were also found in participants’ alcohol use \([F(1, 220) = 56.18, p < .001]\) as well as their best friend’s alcohol use during the sessions \([F(1, 67) = 13.83, p < .001]\).

Table 2 presents the Pearson correlations between young adults’ observed alcohol consumption in the bar lab and their questionnaire reports on alcohol consumption. Because the frequency and weekly recall variables were highly correlated \((r = .60, p < .001)\) we decided to collapse these measures into one overall alcohol consumption variable, reflecting both general frequency and weekly recall. In addition, some of the data were characterized by a dependency of observations. More specifically, average group levels of alcohol use were in part based on the target’s own use and, in some instances \((n = 68)\) on their best friends’ use also. In order to avoid a systematic bias in our correlational analyses, we corrected the group average alcohol use levels by subtracting the young adults’ and best friends’ number of consumption from the group totals, and then dividing the remaining coefficient by the number of total group members not taking into account the participants and best friends. The results demonstrated that participants’ reports of their own and their best friend’s drinking levels were highly correlated. The participants’ self-
### Table 3
Hierarchical Regression Analyses: Barlab and Questionnaire Data on Alcohol Consumption.

<table>
<thead>
<tr>
<th></th>
<th>Questionnaires: Average Consumption ($n = 221$)</th>
<th>Observations: Without Best Friend ($n = 153$)</th>
<th>Observations: With Best Friend ($n = 68$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\beta$</td>
<td>$R^2$ change</td>
<td>$\beta$</td>
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<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Gender</td>
<td>-.16**</td>
<td>.13***</td>
<td>-.40***</td>
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<tr>
<td><strong>Step 2</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
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<td></td>
<td>-.27**</td>
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<tr>
<td>BF Drinking Quest.</td>
<td>.57***</td>
<td>.29***</td>
<td>.30***</td>
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<tr>
<td>BF Drinking Barlab</td>
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<td>-</td>
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<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-</td>
<td></td>
<td>-.08**</td>
</tr>
<tr>
<td>BF Drinking Quest.</td>
<td>-</td>
<td></td>
<td>.19**</td>
</tr>
<tr>
<td>BF Drinking Barlab</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Peer Group Average</td>
<td>-</td>
<td></td>
<td>.64***</td>
</tr>
</tbody>
</table>

*Note. BF = participants’ best friend; Quest. = Questionnaire; ** $p \leq .01$, *** $p \leq .001$*
reports were also found to be correlated - to a moderate extent - to their level of alcohol consumption in the bar lab and to the general group level of alcohol consumption in a session. Similar findings emerged with regard to the best friends’ general drinking levels. Moderate to strong correlations were found between best friends’ drinking levels and their observed drinking behavior in the bar lab. Finally, Correlations between young adults’ observed alcohol consumption, their best friend’s alcohol consumption, and the group average were all found to be rather high.

Next, we performed hierarchical regression analyses (Table 3) in order to examine (1) to what extent the best friends’ general level of alcohol use would be linked to participants’ self-reports of their own alcohol use, (2) to what extent the best friends’ general level of alcohol use would be related to the participants’ alcohol use in the bar lab, and (3) to what extent the best friends’ alcohol use and group average consumption levels in the bar lab would be associated with the young adult’s own alcohol use in the bar lab - controlling for gender in the analyses. The analyses clearly showed that young adults’ self-reported general level of alcohol use was strongly associated with their best friend’s general level of alcohol use [$\beta = .57, p < .001$], even after controlling for the significant association with gender in the analyses. This means that girls, overall, reported lower levels of general alcohol use than boys, and that the higher one’s best friend’s general level of alcohol use was, the higher participants’ reported their own general level of alcohol use to be. With regard to the observed number of alcoholic beverages in the bar lab, again strong gender differences emerged. In the second step of the regression model, it appeared that the best friend’s questionnaire-reported drinking and alcohol consumption in the bar lab were strongly, and positively related to the participants’ own drinking in the bar setting. However, when we controlled for peer group average levels of alcohol consumption, these effects disappeared. Overall, the conclusion from these analyses is that only young adults’ gender and the group-levels of average use were significant predictors of young adults’ own alcohol use when in a bar.

Table 4 shows the outcomes of the multilevel analyses. In general, the outcomes of these analyses replicated the picture that emerged from the hierarchical regression analyses. For the group of participants who had not brought their best friend with them to the bar lab ($n = 153$), we found a significant individual-level effect for gender [$\Delta \chi^2 (1 = 37.692, p < .001)$] and a significant group-level effect for peer group average consumption levels in the bar lab [$\Delta \chi^2 (1 = 37.165, p < .001)$]. A significant interaction term was found for peer group average x gender. Similar results again emerged for the group of participants who had brought their best friend with them to the bar lab. Specifically, we found that females drank less than males in the bar lab. Also, best friends’ alcohol
use was significantly, positively related to young adults’ own alcohol use in the bar lab. For each of the *level 1* (individual level) predictors in the model, random slope coefficients did not attain significance. This is probably caused by the fact that best friend alcohol use was strongly related to peer group average scores - which accounted for all variance in alcohol consumption levels across the groups that visited the bar lab. After incorporating *level 2* (group level) predictors in the model - the peer group average scores - we found that best friend’s alcohol use was not associated with young adults’ alcohol use \[\Delta \chi^2 (1) = 28.87, p < .001\]. Peer group average scores were significantly, positively related to young adults’ own alcohol use in the bar lab. Several interaction effects were found to be significant predictors of participants’ observed levels of alcohol use (Figure 1). The results showed that for males the peer group average alcohol use was strongly related to individual use. For females, however, this relationship was found to be less strong. In addition, the results demonstrated that the association between best friends’ alcohol use in the bar lab and young adults’ own alcohol use was strongest when the proportion of friends that was present in that specific session was lower.

### Table 4 - Multilevel Analyses on Young Adult, Best Friend, and Group Alcohol Consumption.

<table>
<thead>
<tr>
<th></th>
<th>Observations: Without Best Friend (n = 153)</th>
<th>Observations: With Best Friend (n = 68)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Constant (Intercept)</strong></td>
<td>2.750 (0.200) *</td>
<td>2.948 (0.259) *</td>
</tr>
<tr>
<td><strong>Individual-level Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>0.665 (0.398) *</td>
<td>1.359 (0.806) *</td>
</tr>
<tr>
<td>BF Drinking Quest.</td>
<td>0.037 (0.012)</td>
<td>0.597 (0.108)</td>
</tr>
<tr>
<td>BF Drinking Barlab</td>
<td>-</td>
<td>0.305 (0.171) *</td>
</tr>
<tr>
<td><strong>Group-level Factors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer Group Average</td>
<td>0.835 (0.079) *</td>
<td>1.247 (0.161) *</td>
</tr>
<tr>
<td><strong>Cross-level Interactions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer Group Average x Gender</td>
<td>0.495 (0.147) *</td>
<td>0.882 (0.306) *</td>
</tr>
<tr>
<td>Peer Group Average x Prop. Friend</td>
<td>-</td>
<td>1.306 (0.412) *</td>
</tr>
<tr>
<td><strong>Model Fit (Decrease in (\chi^2))</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deviance intercept-only model</td>
<td>683.492</td>
<td>238.766</td>
</tr>
<tr>
<td>Deviance full model</td>
<td>608.649</td>
<td>183.142</td>
</tr>
<tr>
<td>(\Delta \chi^2) (as compared to ‘empty’ model)</td>
<td>74.843***</td>
<td>55.642***</td>
</tr>
</tbody>
</table>

Note. BF = Participants’ Best Friend; Quest. = Questionnaire; Prop. Friends = Proportion Friends; * \(p \leq .05\)
CHAPTER 3 - the role of best friends and peer group members

Figure 1. Plots of Significant Interaction Coefficients in Multi-Level Analyses for Group ‘With Best Friends’ (n = 68). Note. Alcohol = Alcohol Use; Prop friends = Proportion Friends. The upper plot shows the interaction between gender and peer group average, the lower plot shows the interaction between best friend alcohol use and proportion friends.
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Discussion

The results from this study demonstrate that best friends are no more important than peers from a broader clique or peer group for young adults’ alcohol consumption in a bar (lab). What counts seems to be the mere presence of ‘drinking peers’ in a given context - irrespective of the specific relationship they have with the young adult. Results from hierarchical and multilevel regression analyses showed that, as expected, only the group-level effects (i.e., average peer group levels of alcohol consumption) explained youths’ alcohol consumption in the bar. However, this effect was found to be less pronounced for females in the sample. Surprisingly, the results showed that linkages between best friends’ alcohol use in the bar lab and youths’ own alcohol use was strongest when the proportion of friends that was present was lower.

The results from this study are in accordance with findings from experimental research carried out already in the 70’s (e.g., Caudill and Marlatt, 1975) which, using a ‘wine taste task’, made clear that we adjust our drinking rates to those around us - independent of whether or not these strangers behave ‘warm’ or ‘cold’ towards us. Thus, modelling phenomena are not necessarily restricted to best friend-dyads, but may apply to all kinds of social contacts in a broader peer setting. This finding, in terms of broader and group-based drinking situations, may also be explained in terms of social facilitation (Redd and De Castro, 1992). Young adults’ (largely unconscious) evaluations of their peers’ drinking behavior probably makes them fit their own drinking behavior to group levels more easily when more peers surround them. In any case, the current findings are in accordance with those of previous research - in which young adults’ drinking rates were found to be dependent on group size (Van de Goor et al., 1990; Knibbe et al., 1993). The fact that most of the people that made up the peer context in the bar lab were to some extent familiar to the target participants, may have lead to an even stronger manifestation of this phenomenon in the current study.

The present results clearly emphasize that future research may enhance our understanding of peer influence processes by focusing more on the manifestations of interpersonal dynamics on a micro-level (i.e., within a given context or timeframe). This would mean, also, that less emphasis would be put on a ‘traditional’ empirical paradigm that relies on longitudinal survey designs, in which cross-lagged relationships are estimated to determine the extent to which adolescents or young adults select or influence each other into specific substance use patterns (Ennett and Baumann, 1994; Urberg et al., 1997). Specifically, the time intervals employed in longitudinal studies are sometimes unrealistically long to be able to unravel influence processes. That is, adolescents’ best friendships can be relatively shortlived (Hartup, 1996), which undermine the
CHAPTER 3 - the role of best friends and peer group members

seemingly straightforward conclusion that significant cross-lagged relations reflect influence (because old friendships are dissolved and new ones formed between two measurement waves across a 1-year period). More importantly, still, the present study made clear that the extent to which a specific peer influences young adults’ drinking behavior - as well as the explanatory mechanism that brings about this peer influence - may depend on the specific context one is in (Engels et al., 1999).

We explicitly acknowledge that young adults’ best friends are probably quite influential with regard to alcohol consumption, but may be so in quite a different manner than is most often assumed until now. For example, best friends may predominantly act as ‘instigators’ of drinking situations, and may be most influential in terms of deciding or proposing to visit a public drinking place in which alcohol is consumed. When entering the peer setting, however, this setting itself may take over most influence, with automated (i.e., group conformity and social facilitation) behavior processes that explain most variance in young adults’ drinking (e.g., Oostveen et al., 1996). A similar 2-stage model has been proposed in the literature with regard to deviant peer associations and the development of delinquency in adolescence. Scholars have argued that peer influence in the context of close friendship dyads would be manifested most poignantly in the early phases of a causal chain leading up to adolescents’ delinquent acts, with friends accompanying one another to loitering peer groups in which basic group processes then lead to the formation of delinquent behavior.

There might be another way in which best friends influence each other’s drinking behavior. This mechanism evolves around the specific communications amongst adolescents and young adults about their alcohol use. For instance, youths may react positively to their friends’ stories about alcohol binges or getting drunk, and this positive reinforcement may be associated with continued or increased alcohol consumption. Several observation studies by Dishion and colleagues (Dishion et al., 1996; Granic and Dishion, 2003) have in fact demonstrated that with regard to adolescents’ delinquent behavior, so-called ‘deviant talk’ in friendship dyads is a predictor of delinquent behavior in adolescents. Even over the course of several years, the mean duration of deviant talk between two friends was predictive of escalations into substance use and violence (Dishion et al., 1995). Again, this indicates that the explanatory mechanism that underlies the best friend’s influence may not necessarily be found in direct modelling effects, but rather may depend on verbal interactions that increase the readiness to consume alcohol in later drinking situations, when surrounded by peers.

The findings from the present study provide new insights into the process by which peers mold each other’s alcohol use, by means of the observational data from peers in a ‘real life’
drinking context, and because of the fact that we examined the role of best friends and peer groups for young adults’ alcohol use in one model. Despite these strengths, however, certain limitations warrant further scrutiny. First of all, our measure of the ‘proportion of friends’ was not completely indicative of the level of familiarity in peer groups. We could only identify friendships between the participants, but did not have specific information about whether or not the participants in a bar lab session knew each other in any other way or whether some sort of group norm regarding alcohol use had developed in the short pre-session contacts between the participants. Despite the conservative estimates that this bias might have yielded, however, the present study still provided evidence in favor of a moderator effect of familiarity levels in peer groups. Also, because the present study was based on a cross-sectional design we were only able to speak of associations or linkages in young adults’ and their peers’ alcohol use. However, most longitudinal studies have had similar difficulties in disentangling ‘pure’ influence from selection processes (Baumann and Ennett, 1996).

On the basis of the present findings, we conclude that in everyday drinking situations such as in bars, the peer ‘setting’ seems to play a major role in young adults’ drinking behavior. Thus, the homogeneity in youths’ and their best friends’ alcohol use, so commonly observed in longitudinal studies on peer influence, may be ascribed to the fact that friends tend to visit the same public drinking places and thus the same peer contexts together, rather than that they directly model each other’s drinking behaviors. Future research, therefore, should not examine so much the magnitude of selection and influence ‘effects’ in longitudinal cross-lagged panel designs, but focus more on the dynamics of peer interactions as a more suitable means to test the effect of peers on adolescents’ and young adults’ drinking behaviors.
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References


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CHAPTER 4

sociometric status and social drinking: observations of modelling and persuasion in young adult peer groups

Based on:
CHAPTER 4 – sociometric status and social drinking

Abstract

Because young adult drinking occurs primarily in peer groups, this should be taken into account when studying influences on drinking behaviour. This paper aimed to assess influences on drinking within existing peer groups in a naturalistic setting. We first analysed the basic levels at which two types of influence take place. The first one, modelling (imitating others’ drinking), was found to significantly influence individual drinking, whereas for the second one, persuasion (drinking resulting from others’ offers for drinks), no predictions were found. Subsequently, we examined whether peer group members’ sociometric status in the group affected the amount of influence and persuasion exerted and received. No indications were found that sociometric status had an impact on influence in alcohol consumption within a drinking situation. Features of the study and implications of its results are discussed.
CHAPTER 4 – sociometric status and social drinking

Introduction

Peers are assumed to have an important impact on young persons’ drinking levels (see review by Petraitis, Flay & Miller, 1995). Traditionally, best friends are the main focus when studying peer influences (e.g., Andrews et al., 2002; Jaccard, Blanton & Dodge, 2005; Poelen et al., 2006). The drinking behaviour of best friends may be a useful parameter in measuring peer influence, since best friends spend much time together (Jost et al., 1985) and play an important role in the lives of young adults (Hartup, 1996). On the other hand, because young adult drinking in the Netherlands is concentrated in social settings such as bars, discos and pubs (Engels, Knibbe & Drop, 1999) and takes place primarily in groups (Van de Goor, 1990), it is likely to assume that peer group members besides the best friend influence individual alcohol consumption (see e.g. also the Social Impact Theory; Latané, 1981). Moreover, it is questionable whether the emotional bond that exists between best friends necessarily implies that they exert the strongest influence on individual drinking.

We acknowledge that the best friend may be influential concerning, for instance, the frequency of visiting places in which alcohol is consumed (Engels, Knibbe & Drop, 1999; Fink & Wild, 1994). However, within a drinking situation, often more people are involved in shaping the actual drinking of a person, and a friendship between two people may not be the most important aspect affecting the magnitude of influence. For instance, Bot et al. (2005) showed that nonreciprocal friends may have more influence on drinking than reciprocal ones, which may indicate that in a dyad not consisting of typical best friends, the influence may be stronger than in a reciprocal friendship. Further, findings as to whether the best friend or peer group members exert more influence on adolescent alcohol consumption are inconsistent (Bauman & Ennett, 1996; Ennett & Bauman, 1996; Maxwell, 2001; and Urberg, Değirmencioğlu & Pilgrim, 1997). Therefore, we postulate that peer influence may depend on factors other than friendship, and that the influence of others within a specific drinking situation is neglected in most studies (see also Cairns, Xie & Leung, 1998). In studies in which the influence of peers other than friends has been examined, the unit of analysis is often the group in general (for an overview: Bauman & Ennett, 1996), and not separate group members. The aim of the present study is to examine the role of peer group members’ sociometric status in the prediction of influence in drinking behaviour.

Many researchers - starting with Moreno (1934) – have suggested that the power to influence others depends on an individual’s sociometric position in a group. The information individuals provide regarding which group members they, for example, like and dislike, perceive to be popular, or perceive to be withdrawn, appears to be related to a variety of characteristics, such as leadership, aggression, athletic skills, and power to control or influence others (e.g., Lease, Kennedy & Axelrod, 2002). In terms of alcohol consumption, one might expect that the more dominant and popular group members exert a stronger influence on the drinking levels of other group members, whereas more withdrawn and permissive members are more susceptible to be affected by peer group drinking. As far
as we know, very few studies have examined the role of sociometric position in the actual influence on others in the group (Polansky, Lippitt & Redl, 1950a, 1950b). In studies the objective is usually the perception of (power to) influence others or susceptibility to influence (as reported in questionnaires by peers, teachers or parents) and not the actual interpersonal influence (Lease, Kennedy & Axelrod, 2002; Lease, Musgrove & Axelrod, 2002). Even though the outcomes of these studies may be a good indicator of actual social influence being exerted, it is uncertain to what extent and on which time scale this influence occurs. In this study we explore whether information on the sociometric status of individuals in a peer group determines actual influence on the drinking levels of individual members.

In most studies that apply sociometric measurements the focus is on groups that are formed in a top-down manner, such as school classes and work groups. Alcohol consumption, however, is a behaviour that typically takes place in friendship groups, which are formed in a bottom-up manner. The composition and development of friendship groups takes place in another fashion and might depend on group members’ opinion about the others and the individual decision to stay or leave the group (e.g., Engels et al., 1997). Even though composed groups, for which it is more common to apply sociometric measurements, are fundamentally different from friendship groups, we assume that the application of sociometric measurements is also meaningful in friendship groups, or possibly even more meaningful. Reasons may be that individuals may be more motivated to remain a member of a friendship group, or because emotional wellbeing may depend more on friendship groups as compared to, for instance, professional groups (Van Daalen, Sanders & Willemsen, 2005). Even though memberships of friendship groups are on a voluntary basis, differences in intrapersonal preference, or even antipathies, may occur commonly. Further, the impact resulting from one’s position in a peer group may be larger compared to that in a composed group, because in friendship groups behaviour is not often defined by rules made by others (e.g. teachers), but merely by implicit and explicit rules imposed by the group members themselves. Also, in the case of social drinking, in which the amount of alcohol consumed is often not planned beforehand but situation dependent (Knibbe, Oostveen & Van de Goor, 1991), individuals may be more sensitive to peer influence. In sum, we assume that sociometric information may be a useful parameter in predicting influence concerning drinking in peer groups.

It is often reported that peer influence takes place in diverse ways (Cialdini & Sagarin, 2005; Graham, Marks & Hansen, 1991) and this should therefore be incorporated in a research design. Within a drinking situation, both modelling and persuasion have been found to account for unique variance in alcohol use according to survey studies (Aitken, 1985; Brown, Clasen & Eicher, 1986; Graham, Marks & Hansen, 1991; Keefe, 1994). Modelling (also referred to as passive pressure) refers to adapting drinking levels to the consumption of other persons. Persuasion (also referred to as active pressure) refers to soliciting others to engage in a certain drinking behaviour. The relative impact that passive and active pressure have may be modified by an individual’s position in the group, as reflected in the sociometric status. The role of sociometric status on these two processes of peer influence may...
be twofold. On the one hand, peer group members with a certain sociometric status (e.g. those who are more popular or dominant) may be more influential than others, by being both a behavioural model and by persuading others. On the other hand, a certain sociometric status (e.g. being perceived as conformist or socially anxious) may be related to a higher susceptibility to influence, both by means of modelling others or by being persuaded to drink. In conclusion, we will test whether sociometric measures differentiate which individuals may be more likely to be modelled by others in the group, or will be more likely to persuade others to drink. Also, it will be tested whether sociometric status differentiates between which individuals may be more likely to model others or be affected by others who persuade them to drink – insert footnote 1 about here -.

In the present study, we test the impact of sociometric status of peer group members on peer influence processes on alcohol consumption. In contrast to researchers who employed a longitudinal survey design to study peer influence processes, we examine influence in existing peer groups in a bar lab, as we think it is essential to capture these processes in its natural context (see Bruun, 1959). Our rationale is that we think that only in this manner it is possible to assess the actual process in which influence takes place during drinking sessions. Modelling and persuasion, namely, are assumed to occur on several occasions during a “wet” situation, to take place partly unconsciously (Chartrand and Jefferis, 2003), and incidents of conceding to social influence may be uncomfortable to admit; all of these may lead to bias in self-reports.

Method

Participants
Participants were 238 young adults who volunteered to participate (see also Bot, Engels & Knibbe, 2005). They entered our laboratory setting as a group in a sense that one undergraduate student invited 6 to 8 friends to join this research project. A total of 30 peer groups enrolled. The majority of the groups (n = 27) consisted of 8 persons. A total of 128 men (54%) and 110 women (46%) participated age range 18-28 years) of whom 203 (85%) had at least finished pre-university education, which indicates that this study involved participants with a relatively high educational level. A total of 50 respondents (21%) lived with their parents or other caretakers, whereas the remainder either lived alone or with a partner or friend. The composition of the groups ranged from all men (7%) and all women (7%) to mixed gender (86%).

Procedure
The participants were invited to join a study on the effects of alcohol on group discussions and judgements. This explanation was offered to avoid drawing the participants’ attention to the actual aims of the study, i.e. examining alcohol consumption in an ad-lib drinking setting. This type of
procedure is employed in many studies on modelling effects of alcohol consumption (see review by Quigley & Collins, 1999). The groups were invited to our bar lab for two sessions in one year; this article presents the results of the first measurement only. The sessions lasted 2 hours each and took place in a bar laboratory on our campus. This bar lab was situated in a room furnished as an ordinary small pub, with a bar and stools, tables and chairs, indoor games (e.g. table soccer and billiards), and a TV/video. During the sessions the radio played popular music. Volume and type of music were kept similar for all groups. Participants were told that we rented this bar from the faculty and that it was normally used for private parties and celebrations of staff members of the university.

First, after the participants had entered the bar lab, the procedure of the study was explained. Then, they were asked to fill in a questionnaire containing various questions about e.g. drinking patterns, friendships, and sociometric status within the group. This took about 40 minutes. Next, they evaluated 10 persons for attractiveness and intelligence by means of pictures shown on the TV screen, after which they had 30 seconds to discuss each picture within the group. This task was constructed to be undemanding, since answers were dependent on the participants’ own judgement. The aim of employing an undemanding task was to avoid that the amount of alcohol consumed was dependent on some participants’ urges to do well. During the completion of the questionnaire and the task non-alcoholic drinks were offered.

After completing this task, which took about 10 minutes, they had 52 minutes break, in which they had to stay in the bar lab. They could play some of the games, watch TV, or have conversations. Participants were told that they could order a drink at the bar, but that the bartender would not offer them anything because this would burden him unnecessarily, and it would be unethical for researchers to push the participants towards drinking. This way we could assume that drinking resulted only from respondents’ initiation. Soft alcoholic beverages (i.e. beer and wine) and non-alcoholic drinks were available and for free. It is essential to mention that soft alcoholic drinks are relatively cheap in the Netherlands; for example, in ordinary bars or restaurants the price of a 0.25 centilitre beer does not exceed 2 Euros. This implies that offering drinks for free does not encourage excess drinking for the majority of Dutch youngsters (compare for instance the drinking levels reported by Van de Goor, 1990). Of course, if this study had been conducted in countries with a different drinking culture, offering drinks for free might lead to binge drinking in some of the participants. Nonetheless, many students consumed a substantial number of drinks in this time-out session. Nuts and chips were also offered for free. After the 52 minutes free time slot, a second task, that was similar (but with different pictures) to the first one was carried out. After 2 hours the participants went home by taxi. They received 30 euros per group for their participation.

During the 2-hour session video and audio recordings were made. Two cameras were used (one flexible with zoom and one steady), unobtrusively placed in two corners of the bar lab. A research assistant operated the camera in an observation room adjacent to the bar lab. Participants were told in advance that they would be observed during the complete experiment and all gave written permission.
CHAPTER 4 – sociometric status and social drinking

for the use of these data for our study. We stressed that they were not obliged to drink alcohol, because non-drinkers or light drinkers were also of interest for our study. Pilot studies were conducted to verify the credibility of the setting and procedure (see Bot et al., 2005). Participants strongly endorsed the setting’s credibility and none of the 32 participants in the pilot studies guessed the actual aim of the study. Participants were allowed to smoke during the session (if the other group members approved), because in the pilot studies we noticed that forcing smokers not to smoke while drinking strongly affects the feasibility of a normal drinking occasion for them.

The research proposal was approved and funded by the Netherlands Organisation for Scientific Research. The local medical ethical committee (CCMO Arnhem-Nijmegen) approved of the protocols for our study. Debriefing was done after the second assessment. After debriefing, participants were reminded of the possibility to withdraw their consent to use the observational data in our research or ask additional questions. None of them withdrew consent.

Measures

Sociometric Status in the Peer Group. Sociometric nominations of peer group status are a powerful method to assess individual group positions relevant to the study of social influence, among other reasons because they are multi-informant. Nevertheless, few attempts have been made to assess sociometric status in young adult leisure groups. We applied the nomination method described by Newcomb and Bukowski (1983) (Which 3 persons in the group do you like most/least) to assess social impact (a sum of like and dislike nominations) and preference (a subtraction of like and dislike nominations) (items 1 and 2, see Table 1), and combined this with twelve items to assess six more constructs we regarded potentially relevant in terms of social influence (both in terms of influence exerted or received). Some of these items arose from a consideration of the Revised Class Play Table

Table 1
Items and Pattern Matrix of the Sociometric Peer Group Nomination Scale.

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimension 1</th>
<th>Dimension 2</th>
<th>Dimension 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Social-Leader</td>
<td>Conformism</td>
<td>Impact</td>
</tr>
<tr>
<td>1.</td>
<td>Social Impact</td>
<td>.792</td>
<td>.306</td>
</tr>
<tr>
<td>2.</td>
<td>Social Preference</td>
<td>.101</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Which 3 persons in the group...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>….are easygoing and cooperative?</td>
<td>.818</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>….are open and spontaneous?</td>
<td>.810</td>
<td>-.161</td>
</tr>
<tr>
<td>5.</td>
<td>….are able to motivate others?</td>
<td>.671</td>
<td>-.379</td>
</tr>
<tr>
<td>6.</td>
<td>….facilitate cooperation?</td>
<td>.834</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>….are surly and introverted?</td>
<td>-.670</td>
<td>.265</td>
</tr>
<tr>
<td>8.</td>
<td>….are shy and withdrawn?</td>
<td>-.523</td>
<td>.449</td>
</tr>
<tr>
<td>9.</td>
<td>….dominate the conversation?</td>
<td>.566</td>
<td>-.457</td>
</tr>
<tr>
<td>10.</td>
<td>….like to be in charge in the group?</td>
<td>.511</td>
<td>-.541</td>
</tr>
<tr>
<td>11.</td>
<td>….have a lot of self-confidence?</td>
<td>.223</td>
<td>-.702</td>
</tr>
<tr>
<td>12.</td>
<td>….don’t lose their heads?</td>
<td>.140</td>
<td>-.694</td>
</tr>
<tr>
<td>13.</td>
<td>….find it hard to say no?</td>
<td>.360</td>
<td>.781</td>
</tr>
<tr>
<td>14.</td>
<td>….tend to conform to group norms?</td>
<td>.759</td>
<td></td>
</tr>
</tbody>
</table>

Notes. N = 214. Values under .100 are suppressed; values over .500 are printed in bold.
(Masten, Morison & Pellegrini, 1985), but were adapted to fit the assessment sociometric status of young adults in a friendship group. The constructs other than impact and preference were labelled “social” (items 3 and 4), “leadership” (items 5 and 6), “withdrawal” (7 and 8), “dominance” (9 and 10), “stability” (11 and 12), and “conformism” (13 and 14) and were offered in randomised order. In concordance with the method applied by Newcomb and Bukowski, all items asked for the names of three persons in the group for whom the statement applied most. The nominations respondents gave were transformed into the probability of being nominated by the software program ‘SOCSTAT’ (Thissen & Bendermacher, 2002). We allowed both same-gender and cross-gender nominations. Since this instrument was newly developed, we tested the structure of our constructs by conducting a principal components analysis. Direct oblique rotation was applied to approximate underlying constructs rather than searching for uncorrelated dimensions. Three interpretable dimensions with an eigenvalue of over 1 were found. The pattern matrix is depicted in Table 1. In concordance with the first dimension revealed in the revised class play, the first dimension found in our study could be labelled Sociability-Leadership (45.04% of the variance). Preference, sociability, leadership, dominance and withdrawal (negative) all loaded high on this dimension. The second dimension was labelled Conformism (14.61% of the variance), with the conformism items loading highly positive, and the stability items loading highly negative. The third dimension mainly consisted of the score on impact (8.13% of the variance). Individual scores on the dimensions were calculated by multiplying the individual probability scores on each construct with the item’s loading on the dimensions and adding up the scores on all constructs – insert footnote 2 about here -. Dividing by the sum of all loadings provided individual scores on the dimensions.

Weekly alcohol consumption. Weekly alcohol consumption was assessed by asking on which of the previous seven days the respondent consumed alcohol and, if so, how many drinks were consumed. The summed amount of drinks of the last seven days was used in the analyses (cf. Hajema & Knibbe, 1998).

Observed alcohol consumption. We counted the number of drinks consumed in the 52-minute break during the ad-lib drinking session using The Observer 5.0 (Noldus Information Technology b.v., Wageningen, The Netherlands). In the present study we used beer glasses that were smaller than standard glasses. In all sessions the same glasses were used, and filled to the same level. The contents of beer glasses were on average 160 ml and the contents of wine glasses 110 ml (a standard glass). The (lager) beer used in our study contained 5% alcohol, which means that a glass of beer contained on average 8 ml pure alcohol. The wines we offered contained from 11 to 12% alcohol, therefore a glass of wine contained from 12.1 to 13.2ml pure alcohol. We divided the number of glasses consumed beer by 1.5 to end up with a score reflecting standard drinks. If participants did not finish their drinks at the end of the session, we subtracted the remaining volume from the total consumption. Non-alcoholic
drinks were not counted for this measure. Several observers scored the amount of drinks participants consumed and offered, and scored an initial single measures intraclass correlation of 0.90 (average measures: 0.95). This relatively high level of agreement, together with an analysis of the recordings in which different codings appeared, and a discussion about the differences between the observers’ initial codings, led us to decide to allow single codings as observational measures.

*Alcoholic consumptions offered.* The number of times an offer was made to each group member for an alcoholic consumption was counted.

*Strategy for Analyses*

To explore the relations between the variables tested in this study, we first calculated Pearson correlations. To examine to what extent respondents’ drinking was influenced by other group members, we tested the impact of modelling and persuasion from others in the peer group. Because modelling and persuasion only occur within groups, and participants’ observed drinking levels are strongly dependent on the specific peer group they are in, (reflected in the intraclass correlation; $r = .46, p < .001$), we used multilevel analyses (MLwiN 2.02) to answer our questions. We tested both fixed and random effects; fixed effects are the regression weights of the independent variables, and random effects indicate the variance in the regression weights between groups. If a random effect is found, this means that a relation between an independent and dependent variable varies between groups.

Individuals have a certain habitual drinking pattern which predicts individual drinking in our bar lab (Bot, Engels & Knibbe, 2005), and we assumed that the drinking behaviour and persuasive actions of others might lead to individual drinking outcomes other than predicted by drinking habits. We tested this by applying the actor-partner interdependence model, as proposed by Kenny et al. (2002). In this model, outcome behaviour is predicted by an actor and a partner effect. The individual effect is called the actor effect. The effect from the group members, called the partner effect, is composed by summarising the individual scores of all group members other than the individual. In our analyses, we used the habitual drinking pattern of each individual, as reflected in the weekly alcohol consumption given in the questionnaire, as actor effect. The mean of the others’ weekly alcohol consumption was used as partner effect. This way the impact of others in the group on individual behaviour, corrected for the individual’s initial behaviour, can be calculated. By correcting for initial behaviour we aim to capture changes in drinking, rather than absolute drinking levels; this way we assume to reflect influence processes. To test whether any of the three sociometric dimensions had an effect on the amount of influence exerted, we calculated three other partner effects, in which the other group members’ mean weekly consumption was weighed by their scores on the three sociometric dimensions we found. The effect of both the original partner effect and the three partner effects based on sociometric status were tested to observe whether any of the three dimensions resulted in a significantly better prediction of individual alcohol consumption.
CHAPTER 4 - sociometric status and social drinking

Then, we tested whether scores on any of the three dimensions influenced the extent to which respondents were susceptible to modelling the drinking of others. This was done by calculating and testing interactions of the (standard) partner effect with individuals’ scores on the dimensions. A significant interaction would indicate that the score on a dimension has an effect on the magnitude of the partner effect.

It is conceivable that applying other group members’ drinking scores originating from the questionnaires may not be a powerful enough measure to find partner effects on an individual’s alcohol consumption. The relation between weekly drinking (as assessed in the questionnaire) and observed drinking in the bar lab is moderate ($r (214) = .342, p < .001$), and intrapersonal differences between peer group drinking according to the questionnaire and according to observations may distort findings concerning modelling. Therefore, we also conducted analyses in which we applied the observed drinking of group members as partner effect in the prediction of individual drinking. A problem with this analysis is that the assumption of independence in the data is harmed. A group member’s drinking is a dependent variable, but also part of the partner effect of the other group members. Strictly taken, one can state that associations are being tested in this analysis, instead of influence. Nevertheless it can be informative to observe whether stronger associations exist with the drinking of individuals with a certain score on the sociometric status dimensions, as compared to the associations with individuals with a different score.

In the same series of analyses, we tested the effect of persuasion on individual drinking. The effect of offers for alcoholic consumptions on individual drinking was tested. Again, we tested whether interactions existed between the sociometric status of the one offering drinks and individual consumption of the one being offered drinks, and between the sociometric status of the one being offered drinks and his or her alcohol consumption.

Concerning the analyses of the observational data, we had to omit two groups; one because of technical problems, and another because the group members decided to do a drinking game during the time-out session. In the latter group, individual drinking behaviour could of course not be predicted by possible explanatory variables such as the chosen activity. It should be stressed that in none of the other 28 groups drinking games were played.

Results

Descriptive Statistics

A total of 122 males (57%) and 92 females (43%) were involved in the 28 groups we analysed. Group composition ranged from all males to all females to mixed gender groups, and participants were aged 18-28 years ($M = 20.48$). On average, they drank 16.83 (SD = 14.55) alcoholic drinks per week,
### Table 2

*Correlations between model variables.*

<table>
<thead>
<tr>
<th></th>
<th>Dimension 1</th>
<th>Dimension 2</th>
<th>Dimension 3</th>
<th>Gender</th>
<th>Weekly consumption</th>
<th>Observed consumption</th>
<th>Offering alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social-Leader</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conformism</td>
<td>-.695**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact</td>
<td>.152*</td>
<td>-.267**</td>
<td>.126</td>
<td>-.101</td>
<td>.017</td>
<td>-.362**</td>
<td>.342**</td>
</tr>
<tr>
<td>Gender</td>
<td>-.014</td>
<td>.126</td>
<td>-.101</td>
<td>.017</td>
<td>-.362**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly consumption</td>
<td>.063</td>
<td>-.114</td>
<td>.017</td>
<td>-.101</td>
<td>.017</td>
<td>-.362**</td>
<td></td>
</tr>
<tr>
<td>Observed consumption</td>
<td>.090</td>
<td>-.107</td>
<td>.021</td>
<td>-.101</td>
<td>.017</td>
<td>-.362**</td>
<td>.342**</td>
</tr>
<tr>
<td>Offering alcohol</td>
<td>.123</td>
<td>-.114</td>
<td>-.016</td>
<td>-.100</td>
<td>.183**</td>
<td></td>
<td>.125</td>
</tr>
<tr>
<td>Being offered alcohol</td>
<td>.067</td>
<td>-.080</td>
<td>.061</td>
<td>-.105</td>
<td>.238**</td>
<td></td>
<td>.118</td>
</tr>
</tbody>
</table>

*Note.* N = 214. **p < .001; *p < .01.*
CHAPTER 4 – sociometric status and social drinking

and 2.77 (SD = 1.44) standard alcoholic drinks in our research setting. The average number of alcoholic consumptions offered to group members during the break was 1.07 (SD = 2.85).

Associations between sociometric dimensions and drinking variables

Table 2 presents the correlations between the model variables. Sociability-Leadership (Dimension 1) and Conformism (Dimension 2) are negatively correlated, whereas between Dimension 1 and 3 (positive) and between Dimension 2 and 3 (negative) small correlations exist. The three dimensions were not significantly related to reported and observed alcohol consumption and offers for drinks. Males report higher weekly drinking levels in the questionnaire and drank more in the observed setting, but no significant gender differences exist concerning the amount of offers for alcoholic drinks given as well as received. Weekly alcohol consumption is positively related to observed drinking and offering and being offered alcoholic drinks, but observed drinking is unrelated to offering and being offered alcohol. This could be an indication that offering drinks leads to convergence of drinking in a setting. Finally, offering drinks and being offered drinks are slightly

Table 3
Multilevel Analyses on Differences Regarding Influence from Reported Drinking on Observed Drinking Behaviour.

<table>
<thead>
<tr>
<th></th>
<th>Overall Values (SE)</th>
<th>Social-Leader Values (SE)</th>
<th>Conformism Values (SE)</th>
<th>Impact Values (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>3.01 (0.50)**</td>
<td>3.16 (0.49)**</td>
<td>3.07 (0.49)**</td>
<td>3.03 (0.49)**</td>
</tr>
<tr>
<td>Gender</td>
<td>0.75 (0.21)**</td>
<td>0.74 (0.20)**</td>
<td>0.76 (0.21)**</td>
<td>0.75 (0.21)</td>
</tr>
<tr>
<td>Actor (Weekly)</td>
<td>0.02 (0.01)*</td>
<td>0.02 (0.01)*</td>
<td>0.02 (0.01)*</td>
<td>0.02 (0.01)*</td>
</tr>
<tr>
<td>Partner (Weekly)</td>
<td>0.03 (0.01);‡</td>
<td>-</td>
<td>0.01 (0.00);‡</td>
<td>0.01 (0.00);‡</td>
</tr>
<tr>
<td>Gender X Actor (Weekly)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gender X Partner (Weekly)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Random Effects

Level 2

|                        |                     |                           |                        |                   |
| Intercept              | 2.81 (1.15)         | 2.77 (1.14)               | 2.78 (1.14)            | 2.82 (1.15)       |
| Gender                 | 0.45 (0.28)         | 0.41 (0.28)               | 0.43 (0.28)            | 0.45 (0.29)       |
| Actor (Weekly)         | -                   | -                         | -                      | -                 |
| Partner (Weekly)       | -                   | -                         | -                      | -                 |
| Gender X Actor (Weekly)| -                   | -                         | -                      | -                 |
| Gender X Partner (Weekly)| -               | -                         | -                      | -                 |

Covariance Intercept-Gender -1.13 (0.56) -1.08 (0.55) -1.11 (0.55) -1.14 (0.56)

Level 1

|                        |                     |                           |                        |                   |
| Intercept              | 0.91 (0.10)         | 0.91 (0.10)               | 0.91 (0.10)            | 0.91 (0.10)       |

Deviance intercept-only model: 677.78

Deviance full model 631.43 633.23 631.82 631.41

\( \chi^2 \) (as compared to empty model) 46.35 44.55 45.96 46.37

Note. N = 214. ** p < .001; * p < .01; ‡ p < .10. Presented values are significant, or obligatory (when non-significant, indicated with NS) model variables. Non-significant values are omitted from the analyses, and indicated by dashes.
positively related.

**Multilevel Analyses on Modelling and Persuasion of Observed Drinking**

Table 3 presents the results of four multilevel analyses. The first shows that, overall, gender plays an important role in determining the amount of alcohol consumed in the bar lab setting. Further, the reported weekly alcohol consumption is a positive predictor of observed alcohol consumption (Actor-effect), and the reported drinking of peer group members is another significant predictor (at the .10-significance level) of individual drinking. Random effects were found for the intercept, gender and their covariance, indicating that the overall drinking level differed per group, as did the effect of gender, which varied between groups and dependent on the overall drinking level. The three other analyses in Table 3, in which the partner effects were weighted for individual scores on the dimensions, showed a similar picture and no smaller model deviance as compared to that in the overall analysis, indicating that differentiating group members’ reported alcohol consumption for sociometric status in the partner effect does not lead to a better prediction of modelling than without weighing for

Table 4

**Multilevel Analyses on Differences Regarding Susceptibility to Influence from Reported Drinking on Observed Drinking Behaviour.**

<table>
<thead>
<tr>
<th></th>
<th>Overall Values (SE)</th>
<th>Social-Leader Values (SE)</th>
<th>Conformism Values (SE)</th>
<th>Impact Values (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>3.01 (0.50)**</td>
<td>3.01 (0.50)**</td>
<td>3.01 (0.50)**</td>
<td>3.01 (0.50)**</td>
</tr>
<tr>
<td>Gender</td>
<td>0.75 (0.21)**</td>
<td>0.75 (0.21)**</td>
<td>0.75 (0.21)**</td>
<td>0.75 (0.21)**</td>
</tr>
<tr>
<td>Actor (Weekly)</td>
<td>0.02 (0.01)*</td>
<td>0.02 (0.01)*</td>
<td>0.02 (0.01)*</td>
<td>0.02 (0.01)*</td>
</tr>
<tr>
<td>Partner (Weekly)</td>
<td>0.03 (0.01)‡</td>
<td>0.03 (0.01)‡</td>
<td>0.03 (0.01)‡</td>
<td>0.03 (0.00)‡</td>
</tr>
<tr>
<td>Dimension X</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dimension X Partner</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Random Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Level 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>2.81 (1.15)</td>
<td>2.81 (1.15)</td>
<td>2.81 (1.15)</td>
<td>2.81 (1.15)</td>
</tr>
<tr>
<td>Gender</td>
<td>0.45 (0.28)</td>
<td>0.45 (0.28)</td>
<td>0.45 (0.28)</td>
<td>0.45 (0.28)</td>
</tr>
<tr>
<td>Actor (Weekly)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Partner (Weekly)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dimension X</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dimension X Partner</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Covariance Intercept-Gender</td>
<td>-1.13 (0.56)</td>
<td>-1.13 (0.56)</td>
<td>-1.13 (0.56)</td>
<td>-1.13 (0.56)</td>
</tr>
<tr>
<td><strong>Level 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.91 (0.10)</td>
<td>0.91 (0.10)</td>
<td>0.91 (0.10)</td>
<td>0.91 (0.10)</td>
</tr>
</tbody>
</table>

**Deviance intercept-only model:** 677.78

**Deviance full model**

|                     | 631.43 | 631.43 | 631.43 | 631.43 |

$\chi^2$ (as compared to empty model) 46.35 46.35 46.35 46.35

Notes. N = 214. **p < .001; * p < .01; ‡ p < .10. Presented values are significant, or obligatory (when non-significant, indicated with NS) model variables. Non-significant values are omitted from the analyses, and indicated by dashes. Variables not in the analysis are indicated with an X.
individual scores on the dimensions. For dimension 1, which would intuitively be the most interesting dimension when searching for a strong predictor of social influence, the partner effect was not even significant at the .10 level, indicating that the reported drinking of the individuals scoring highest on sociability and leadership was not predictive of other participants’ observed drinking.

Table 4 shows whether differences between members exist concerning susceptibility for peer group influence. The overall test is equal to that in Table 3, but now interactions were tested of the participant’s dimension score with the partner effect. A significant interaction would indicate that individuals with a high score on the dimension would more likely be affected by the reported drinking of others in the group. Intuitively dimension 2, on which the “stability” and “conformism” items scored high, would be most likely to affect susceptibility to modelling others’ drinking. Nevertheless, no interactions were found, and thus we can state that sociometric status does not affect susceptibility to modelling.

Table 5 shows the results of the multilevel analyses in which observed drinking of the group members was taken as a predictor of individual drinking levels. Main gender, actor and partner effects were found, but were specified by interactions between gender and actor effect, and gender and

<table>
<thead>
<tr>
<th></th>
<th>Overall Values (SE)</th>
<th>Social-Leader Values (SE)</th>
<th>Conformism Values (SE)</th>
<th>Impact Values (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.13 (0.62)NS</td>
<td>0.18 (0.63)NS</td>
<td>0.42 (0.60)NS</td>
<td>0.11 (0.61)NS</td>
</tr>
<tr>
<td>Gender</td>
<td>0.34 (0.42)NS</td>
<td>0.38 (0.42)NS</td>
<td>0.22 (0.42)NS</td>
<td>0.39 (0.41)NS</td>
</tr>
<tr>
<td>Actor (Weekly)</td>
<td>-0.01 (0.02)NS</td>
<td>-0.02 (0.02)NS</td>
<td>-0.02 (0.02)NS</td>
<td>-0.02 (0.02)NS</td>
</tr>
<tr>
<td>Partner (Observed)</td>
<td>1.35 (0.20)**</td>
<td>2.48 (0.37)**</td>
<td>2.53 (0.39)**</td>
<td>2.40 (0.34)**</td>
</tr>
<tr>
<td>Being offered</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gender X Actor (Weekly)</td>
<td>0.02 (0.01)‡</td>
<td>0.02 (0.01)‡</td>
<td>0.02 (0.01)‡</td>
<td>0.02 (0.01)‡</td>
</tr>
<tr>
<td>Gender X Partner (Observed)</td>
<td>-0.48 (0.15)**</td>
<td>-0.94 (0.27)**</td>
<td>-0.90 (0.30)**</td>
<td>-0.89 (0.25)**</td>
</tr>
<tr>
<td>Gender X Being offered</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

| **Random Effects**   |                     |                          |                        |                   |
| Level 1              | 0.98 (0.10)         | 1.04 (0.10)              | 0.98 (0.10)            | 1.05 (0.10)       |

**Note.** N = 214. **p < .001; * p < .01; ‡ p < .10. Presented values are significant, or obliged (when non-significant, indicated with NS) model variables. Non-significant values are omitted from the analyses, and indicated by dashes.
partner effect. Corrected for these interactions the main effects for gender and actor effect disappeared and only the partner effect remained significant. This implies that the drinking behaviour of others in the group was predictive of both male and female drinking. The interaction of gender and the actor effect means that, only for girls, the reported drinking in the last week was predictive of drinking in the bar setting. The interaction of gender and the partner effect entails that the drinking of group members in the setting was more predictive concerning drinking in men. Apparently, males are more sensitive to the drinking behaviour of others when their own drinking rate is shaped (see also Engels et al., 2006). Weighing the partner effect with each of the three sociometric dimensions and conducting the same analyses led to slightly better, but not significantly better results (for dimension 2 and 3) in the prediction of individual drinking, implying that no stronger associations exist with the drinking of participants scoring high on any of the sociometric dimensions. Furthermore, we tested in this model whether offering alcoholic drinks had an effect on drinking. It was found that being offered drinks had no effect on drinking, nor had weighing for the dimension score of the one offering. Finally, gender of the one being offered alcoholic consumptions made no difference in observed drinking.

Table 6 shows that scores on the dimensions were also unrelated to the extent in which group members drinking was associated with others’ drinking.

Table 6
Multilevel Analyses on Differences Regarding Susceptibility to Influence from Others’ Observed Drinking on Individual Observed Drinking Behaviour.

<table>
<thead>
<tr>
<th></th>
<th>Overall Values (SE)</th>
<th>Social-Leader Values (SE)</th>
<th>Conformism Values (SE)</th>
<th>Impact Values (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>1.32 (0.36)**</td>
<td>1.32 (0.36)**</td>
<td>1.32 (0.36)**</td>
<td>1.32 (0.36)**</td>
</tr>
<tr>
<td>Gender</td>
<td>0.58 (0.16)**</td>
<td>0.58 (0.16)**</td>
<td>0.58 (0.16)**</td>
<td>0.58 (0.16)**</td>
</tr>
<tr>
<td>Actor (Weekly)</td>
<td>0.01 (0.01)*</td>
<td>0.01 (0.01)*</td>
<td>0.01 (0.01)*</td>
<td>0.01 (0.01)*</td>
</tr>
<tr>
<td>Partner (Observed)</td>
<td>0.74 (0.07)**</td>
<td>0.74 (0.07)**</td>
<td>0.74 (0.07)**</td>
<td>0.74 (0.07)**</td>
</tr>
<tr>
<td>Dimension</td>
<td>X</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Dimension X Partner</td>
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</tr>
<tr>
<td>Being offered</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

| **Random Effects**       |                     |                           |                        |                   |
| **Level 1**              |                     |                           |                        |                   |
| Intercept                | 1.04 (0.10)         | 1.04 (0.10)               | 1.04 (0.10)            | 1.04 (0.10)       |

<table>
<thead>
<tr>
<th>Deviance intercept-only model</th>
<th>Deviance full model</th>
</tr>
</thead>
<tbody>
<tr>
<td>677.78</td>
<td>615.20</td>
</tr>
</tbody>
</table>

\[ \chi^2 \text{ (as compared to empty model)} = 62.58 \]

Note. N = 214. ** p < .001; * p < .01; ‡ p < .10. Presented values are significant, or obligatory (when non-significant, indicated with NS) model variables. Non-significant values are omitted from the analyses, and indicated by dashes. Variables not in the analysis are indicated with an X.
CHAPTER 4 – sociometric status and social drinking

Discussion

The aim of this study was to examine the role of peer group members’ sociometric status on influence exerted and received concerning alcohol consumption in a naturalistic setting. Other group members’ reported and actual drinking levels predict individual drinking. Reported drinking accounts for a small but significant part of other group members’ drinking, which means that an actual influence exists from young people’s drinking habits on others’ drinking in a peer group setting. Within the setting individual drinking strongly predicts others’ drinking, so it can be concluded that strong similarities exist in drinking within the situation, which can be partly explained by reported individual drinking. This supports the argument that peers are important in shaping the drinking of individuals into adulthood (see also Bartholew, Sher, and Krull, 2003), at least when together in a drinking setting. It is noteworthy that robust evidence was found for modelling but not for persuasion. A possible explanation for this difference is that the effects from persuasion are stable over time and already reflected in the questionnaire data. That is, some individuals may be susceptible to persuasion from generally anyone, and usually someone is available to play that role. The outcomes of modelling processes, on the other hand, might depend on the absolute drinking levels of those present in the drinking session and therefore lead to outcomes that were not reflected in the reported drinking.

Further, the sociometric status of peer group members does not predict variations between the amount of influence being exerted or received. This means that, even though adaptation in drinking takes place in groups, sociometric information does not add to the prediction regarding which members’ drinking will most likely be a source of influence to others. In general, we have two possible explanations for these findings. The first is that sociometric status does make a difference, but no relations were found in this study. The second is that sociometric status does not make a difference concerning influence in drinking in groups.

Reasons for Lack of Findings concerning Sociometric Status: The Present Study

To start with the first explanation, there are some features of this study that may account for the absence of the differential role of sociometric status. First, sociometric measures are most often used in groups of younger people. Coie, Dodge, and Coppotelli (1982) showed that at a higher age, less variance in dependent variables can be accounted for by sociometric scores. Berndt (1979) found that the peak concerning tendency to conform to peer antisocial behaviour takes place around the age of 15 years. On the other hand, concerning alcohol use, Keefe (1994) found that the pressure to drink more increases with age, which might undo the effect of the decreasing tendency to conform. Nevertheless, it is possible that sociometric status is important in shaping drinking within groups, but in younger age groups.

A second reason for the lack of findings on the role of sociometric status would be – insert footnote 3 about here - that we have been applying sociometric measures on a continuous scale, instead of combining scores to classify people in groups (like Newcomb & Bukowski, 1983).
Combining continuous scores into two-dimensional categories might have revealed certain combinations of sociometric scores that are predictive of social influence. On the other hand, Jiang and Cillessen (2005) reported that many scholars studying sociometric peer nominations have shifted to the use of continuous measures nowadays, and these measures allow for more exact measurements of (changes in) levels of the constructs assessed, in comparison with categorical measures.

Third, the impact of people with a particular sociometric position may depend on the dyadic relation between the source of influence and the one being influenced. Different outcomes may, for example, be expected in the case where a popular person tries to persuade someone who does or does not like him or her (albeit that one can not simply state that people who are not liked are of no importance in shaping behaviour); the dyadic evaluation of an influencer by a target of influence may be quite different from the total group’s evaluation of this influencer.

A fourth reason why our sociometric measures did not explain influence may be that the nominations the participants were asked for were on a general level, and not situation specific. Fink and Wild (1994) and Jiang and Cillessen (2005) suggested that it might be better to ask participants about which group members they would nominate in a certain situation or for a certain activity. In the present study this may have led to asking people, e.g., who they were most willing to go out with, instead of who they liked most; or who were the most dominant in persuading others to continue drinking rather than asking who were dominant in general.

Fifthly, we applied only one method of using sociometric information to study influence, whereas many other ways of using information of individuals’ positions in a group are available, e.g. social network data (for an overview: Valente, Gallaher, and Mouttapa; 2004).

Finally, it is possible that influence in drinking resulting from sociometric position leads to different results than we expected from modelling or persuasion. They may be expressed in a manner that does not lead to convergence to behaviour more or less the average of the peer group members’ reports. For example, Dishion, McCord, and Poulin (1999) found that friends may reinforce each others’ deviant expressions, which may lead to overall elevated levels of antisocial behaviour in all youngsters.

Reasons for Lack of Findings concerning Sociometric Status: No Actual Relation

When looking more closely at the second explanation for the lack of findings related to sociometric status (i.e. that sociometric status does not make a difference concerning influence in drinking in our research groups), other explanations are possible. An example of why sociometric measures may be insufficient in predicting influence is that other processes play a role, together with sociometric status. For example, for group “political” reasons, certain individuals that may be well liked and even perceived as leaders in the group, may not be followed when struggles concerning leadership occur. Also, group members may keep a balance when it comes to following others’ behaviour, to maintain an equilibrium that each group member conceives as ‘righteous’ – insert footnote 4 about here -. It may even be typical for friendship groups to not want to have strong
leadership behaviour or to permit behaviour deviant from the others in the group; perhaps this even leads to the finding that attachment to friends has an effect on norm-breaking behaviour (Helsen, Vollebergh & Meeus, 1999). As friendships are formed on the basis of equality, leadership tendencies may even be a threat to the continuity of friendships.

Another possibility is that adaptation in drinking within groups takes place at a very basic level, and sociometric status and dyadic relations play a very limited role. The drinking levels of people present in a ‘wet’ context may be adopted, unrelated to these persons’ sociometric status or relations existing between members in the group. For example, Overbeek and colleagues (2006) found that, in a bar lab setting, best friends’ drinking did not predict individual drinking more than that of other group members. Bruun (1959) found that group members are likely to adopt the drinking of the heaviest drinker in the group. This may indicate a strong influence of people in the situation (irrespective of the type of interrelations they have), or possibly characteristics of the situation itself, on individual drinking. The findings of observational research in public drinking places of Van de Goor (1990), who found effects from gender composition of the group, group size and music volume on drinking levels, confirms the contextual specificity of drinking levels. This line of reasoning may be substantiated by findings of Van de Beek (in preparation) who found that, within a drinking situation, alcohol consumption will be modelled mainly from the people involved in the same subgroup and activity.

Group members, triggered by relatively simple causes such as one person who starts to drink quickly, an overall tendency to celebrate, or positive expectancies or evaluations of alcohol use, may contaminate each other when together in a situation where alcohol is available. Therefore, we might understand young people’s drinking in existing social groups in terms of social drifts leading to heavy drinking in one group and limited drinking in another, instead of influence processes affected by variations of group members’ social roles.

This brings us back to the introduction of this paper in which it was stated that researchers’ attention concerning best friends’ influence on alcohol consumption is disproportionate, as compared to that for the peer group. We stress that the findings in the present study do not rule out that friends may be very influential concerning drinking patterns, for instance by inviting each other to drinking occasions, and may remain influential within the situation, but possibly only because of the time they spend together.

These findings may have relevance for the prevention of drinking in young adults. Besides the often studied best friend, peer group members, or more basically the ones present in a drinking situation, may strongly affect individual alcohol consumption. This means that it may be appropriate to teach young people to resist influence overall, rather than teaching them skills to resist influence from leading figures. It may also be advisable to teach young persons to be aware of the potential automatism at which influence processes take place. Not acts of persuasion, but (the more automatic) modelling of drinking is important in shaping individual’s drinking in a peer group. Knowing this may
help to prevent binge drinking, at least for the part which is caused by influence the youngster is only partly, or is totally unaware of.
Footnotes

1. For more information on refusal assertiveness, see Epstein, Griffin and Botvin (2001).
2. In case of negative loadings on a dimension, the original scores on the items were reversed and multiplied with the positive value of the loading.
3. For completeness, we have tested variability in influence exerted and influenceability as a function of the sociometric status groups popular, neglected, rejected, controversial, and average. Also for these groups no differences in effects were found.
4. In that case, group leaders may be only initiate drinking or ordering behaviour, instead of being dominant during a total drinking episode.
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CHAPTER 5

parental behaviour and young adults’ alcohol use: observations of drinking in a peer context

Resubmitted for publication as:
CHAPTER 5 - parental behaviour and young adults' alcohol use

Abstract

In the current study we examined whether parental behaviours is related to the alcohol consumption of young adults in a peer context. Observations of ad-lib drinking in a peer context in a naturalistic setting were analysed, together with questionnaire data on weekly alcohol consumption and heavy episodic drinking. Associations were found between young adult alcohol consumption and parental alcohol specific monitoring, parental support and alcohol consumption of the father. Analyses revealed a moderation between the duration of adolescent independence from the parents and alcohol specific monitoring in the prediction of observed drinking, but the causal direction of this prediction is unclear. It is concluded that parents have limited influence on the alcohol consumption of their young adult offspring.
CHAPTER 5 - parental behaviour and young adults’ alcohol use

Introduction

As goes for many behaviours, alcohol consumption can not be considered isolated from the social environment. Even though the effects from alcohol consumption may differ between individuals, not all individual variance in alcohol consumption can be accounted for by individual differences in the ability to enjoy the pleasant or disregard the negative effects of alcohol. Alcohol consumption is embedded in an individual’s living environment through e.g. the presence of bars, discos, parties and other contexts where alcohol is available, the drinking habits of parents and rules they apply concerning alcohol consumption, drinking of other relatives like siblings, and drinking (culture) among peers. Especially for young people, drinking is mainly a social activity (Knibbe, Oostveen & Van de Goor, 1991) and individual differences in alcohol consumption may therefore be highly dependent on the social environment (e.g., Bauman & Ennett, 1996). In Western countries, most of the young adult alcohol consumption takes place in a peer environment, and parents will be absent during the majority of drinking episodes. Thus, it is questionable whether parental behaviours remain influential in affecting their children’s drinking levels when they are in their young adult years. In the present paper, we will examine the role of parents’ behaviour in young adult’s observed drinking levels in a peer setting.

Several parenting practices are found to be related to adolescent alcohol use. One of these practices is parental support. The provision of parental support is related to less deviant behaviour among young adolescents. Supportive parents seem to be more successful in achieving their goals in upbringing and buffer their children from influences of deviant peers. Concerning drinking, it is found that e.g. high levels of maternal support are related to a lower frequency and intensity of alcohol consumption (see review by Van Zundert et al., 2006). When the adolescent grows older, however, it becomes less appropriate to consider alcohol consumption (or peer alcohol consumption) deviant behaviour, so it is uncertain whether the effect of parental support will still last into young adulthood, even though some research suggests it may (Barnes, Reifman, Farrell & Dintcheff, 2000). Furthermore, the amount of perceived parental support decreases, in favour of perceived peer support, when age increases (Helsen, Vollebergh, & Meeus, 2000), which may decrease the likelihood of finding an association between parental support and young adult drinking.

Parental monitoring can also be considered an effective way to reduce adolescents’ alcohol consumption (e.g., Bray et al., 2001; Van der Vorst, Engels, Meeus, Dekovic, & Van Leeuwe, 2005; Wood, Read, Mitchell, & Brand, 2004). Monitoring offspring’s activities may be an adequate way of preventing engagement in heavy drinking. The awareness of the parent’s attentiveness and controlling efforts may be enough for the adolescent to ensure that no signs of behavioural excesses will be transmitted. Whether the effect of general monitoring practices of parents is more effective in prohibiting their offspring from heavy drinking as compared to specific parental legislation concerning
alcohol is subject of debate (Van Zundert et al., 2006). In this paper it will be scrutinized whether
general or alcohol-specific monitoring has an effect on the alcohol consumption of young adults.

The amount of alcohol consumed by the parents may also have an effect on the young adult’s
drinking behaviour (e.g. Engels et al., 1999b). In early life, an individual’s parents are the most
important role models, leading to modelling effects of many behaviours, also drinking. At least into
adolescence the drinking habits of parents are modelled (e.g., Li, Pentz, & Chou, 2002; Petraitis, Flay,
& Miller, 1995; Wood et al., 2004) and possibly modelling effects may even endure into young
adulthood (see also Poelen et al., in preparation).

Is it realistic to assume that parental actions are still affecting their children’s drinking, even
when their children are in their young adult years? Certainly, the relative role of parents and peers on
alcohol consumption may change when an adolescent grows older. Early adolescents are under the
authority of their parents, but at the same time they are very sensitive to peer influence, because
belonging to their peer group is highly aspired (Hartup, 1996). When adolescents grow older, their
parents’ authority usually decreases (Bogenschneider, Wu, Rafaelli & Tsay, 1998), but it is uncertain
whether this will lead to a smaller impact on their offspring’s drinking behaviour. Possibly, parental
messages concerning drinking behaviour will be taken more seriously by adolescents who become
older (or more experienced in drinking). They have perhaps internalised their parents’ values about
drinking and may better understand the reasons behind the rules provided by their parents. At the same
time, when growing older, adolescents start to develop more of an own identity and will possibly be
less vulnerable to peer influence. The findings of Poelen and colleagues (in preparation) seem to
confirm this view. In a twin-study they found that parents had a small, but persistent effect on the
drinking of their offspring, whereas peers had a larger impact on the short-term but this effect faded
over time. What might be relevant with regard to the expected effects of parental behaviour on young
adult drinking, is whether youngsters are in the physical surrounding of their parents on a regular
basis. On the basis of the findings discussed, we expect that parental actions are not only relevant in
affecting adolescent’s, but also young adult’s drinking. Further, because the role of parents might be
stronger when children are still living with their parents or left parental home quite recently, we tested
whether the duration of time young adults live independently from their parents has an effect on the
associations between parental behaviours and young adult’s alcohol consumption.

Focussing on specific social factors, like parenting, to scrutinize the aetiology of adolescent
alcohol consumption entails the risk that the research questions may be too narrow to gain insight into
the complex processes that result in the alcohol consumption patterns of individuals. Peers for
example may also play a substantial role in the development of drinking patterns in young adults
(Borsari & Carey, 2001; Bot, Engels, Knibbe & Meeus, 2005; Graham, Marks, & Hansen, 1991;
Wood, Read, Palfai, & Stevenson, 2001). In our opinion, it is important to examine the role of parental
behaviours on individual drinking, acknowledging the fact that the majority of alcohol consumption of
young adults is consumed in social situations together with peers. Thus, it is essential to predict young
adults’ alcohol consumption by using a dependent measure that does justice to the complex peer environment in which drinking is shaped.

In the present study, the assessment of alcohol use is carried out by employing an unconventional research method, namely the use of observational data on drinking levels within peer groups (Bot, Engels & Knibbe, 2005). Conventional studies usually involve the use of questionnaire data when trying to answer research questions. In these studies, alcohol use and its predictors are assessed by self-reports and, in some cases, peer and parent-reports. These methods involve some limitations. Questionnaire data on alcohol use may be affected by biases resulting from social desirability, recall problems and perception of the respondent (Bauman & Ennett, 1996). By using observations, we overcome most of these problems. Using observational data provides an opportunity to study individual behaviour and social interactions during an actual drinking episode. Observations in a social drinking situation (at the condition that the observed situation is naturalistic) are protected from biases resulting from social desirability, recall and problems with perception. To allow comparing our observational findings with other studies, we will also report and discuss the associations of parental behaviours with two other measures of drinking behaviour that were assessed in our sample. These drinking measures were assessed in a conventional manner and will shed light on the differences between observational measures and questionnaire measures.

In sum, the aim of the current study is to examine the role of parental behaviours, in terms of support, (alcohol specific) monitoring, and own alcohol use, in drinking behaviour of young adults. The associations of parental behaviours with their offspring alcohol use will be studied using questionnaire and observational data on drinking. To our knowledge, this is the first study that examined whether parental behaviours are predicting young adult’s actual, instead of reported, alcohol use, by using data from a bar lab in which young people’s drinking in a peer context has been observed.

**Method**

**Participants**

Participants were 238 undergraduate students who volunteered to participate. They entered our laboratory setting as a group in a sense that 1 student invited between 6 and 8 friends to become involved in this research project. A total of 30 groups of peers were enrolled. The majority of groups (n = 27) consisted of 8 persons. A total of 128 men (54%) and 110 women (46%) participated, ranging in age from 18 to 28 (M = 20.5, SD = 2.10). The constellation of the groups differed from all men (7%), all women (7%) to mixed gender (86%) (see also Bot, Engels & Knibbe, 2006).

**Procedure**

Participants were invited to become involved in a study on the effects of alcohol on judgement and group discussions. This was a cover-up story in order to disguise that participants were aware of
the actual aims of the study, i.e. examining alcohol consumption in an ad-lib drinking setting. This type of procedure is employed in many studies on modelling effects on alcohol consumption (see review by Quigley & Collins, 1999). The groups have been invited to our bar lab for two sessions in one year; in this study we only looked at the results of the first measurement. The first session lasted 2 hours and took place in a bar laboratory at our campus. This bar lab was a room that was equipped as an ordinary small pub, consisting of a bar with crutches, table soccer, billiards, a pinball machine, tables and chairs, a few relaxing couches, and TV/video. Popular music was played. Volume and type of music was kept stable over the groups. Participants were told that we hired this bar from the faculty and it was normally used for private parties and celebrations of staff members of the university.

First, after entering the bar lab, the process of the study was explained to the participants. All of them had to permit being observed and recorded during the 2h session. After that, they were asked to fill in a questionnaire consisting of questions on drinking patterns, expectancies, friendships and type of relationships within the group. This took about 40 minutes. After that they had to complete the distracting task, which was shown on a TV. This task consisted of the evaluation of 10 pictures of persons. They had to fill in individually whether they thought these persons were attractive as well as intelligent, and after doing that, they had 30 seconds for each picture to discuss their own opinion with the other group members. During the completion of the questionnaire and the task, non-alcoholic drinks were offered. After completing the task which took about 10 minutes in total, they had 50-55 minutes time-out which they had to spend at the bar lab. They could play some of the available games, watch TV or just have conversations. Participants were told that they could order a drink at the bar, but the bartender would not ask them whether they would like to have something to drink, because this would burden the bartender unnecessarily and it would be unethical to push participants’ drinking. Soft alcoholic beverages (i.e. beer, wine) and non-alcoholic drinks were available, and for free. Nuts and chips were offered for free. After the slot of 50-55 minutes free time, they had to do the second task, which was similar (but with different pictures) to the first task. This task took the same amount of time as the first one. After 2h, participants were brought home by taxis. Participants received 30 euros per group for their participation.

During the 2h session, video and audio recordings were conducted. Two cameras were used (one flexible with zoom and one steady) and hidden in two corners of the bar lab. Cameras were tended by a research assistant in an observation room next to the bar lab. Participations were told in advance that they would be observed and recorded and all gave permission to use these data for our study. When participants asked whether, and if so, why, they were also observed during the break, they were told that this was the case in order to assess the total amount people drank, which would be important to assess this individual’s expected alcohol effect on the second task. Pilot studies were conducted to verify the credibility of the setting and procedure. Participants strongly endorsed the credibility of the setting and not one of the 32 participants in the pilot studies guessed the actual aim of the study.
Participants were allowed to smoke during the session (when the other group members agreed) because in the pilot studies we noticed that forcing smokers not to smoke while drinking, strongly affects the feasibility of a normal drinking occasion for them.

The research proposal was approved and granted by the Dutch Foundation for Scientific Research. The protocols for our study were approved by the medical ethical committee (CCMO Arnhem-Nijmegen). The groups have come to our bar lab two times in one year. Debriefing of participants was done after the second assessment.

Data from the questionnaires were entered in SPSS 12.0.1. The video and audio recordings were coded in The Observer 5.0 (Noldus Information Technology b.v., Wageningen). We did not code the behaviours during both tasks but only coded the slot of free time. A coding scheme was developed to assess general activities (e.g., playing billiard, pinball, talking), alcohol specific activities (e.g., asking for drinks, ordering, obtaining drinks), and company (e.g., with whom they interact) during the 52 minutes free time. All coding was done taking the actual time of the session into account. Thus, we were able not only to assess how many (alcoholic) drinks an individual consumed, but also when, in what order, with whom and during which activity. Coding was conducted by 5 trained research assistants. For the purpose of the current study, we only focused on the number of alcoholic and non-alcoholic drinks consumed.

Concerning the analyses on the observational data, we had to omit two groups. One group because of technical problems with video equipment leading to incomplete files on individual group members and one group because they decided to do a drinking game during the time-out session. In this group, individual drinking behaviour could of course not be predicted by possible explanatory variables such as previous drinking levels or expectancies but only by chance and probably experience with this drinking game. It should be stressed that in none of the other 28 groups, drinking games were played.

**Measures**

**Parental Support.** Parental support was assessed by a scale constructed by Scholte et al. (2001). This scale consists of six items on a five-point scale and is completed by the adolescent. Examples of the items are ‘My parents support me in what I do’ and ‘My parents often ridicule me’ (reversed item). Cronbach’s alpha is 0.78 and the mean score is 4.29 (SD = 0.53)

**Parental Monitoring.** Parental monitoring was assessed by an adaptation (Harakeh et al., 2004) of an instrument of Kerr and Stattin (2000). This scale consists of six items on a six-point scale. Adolescents were asked how often their parents were trying to find out details about their activities, e.g. ‘how their money is spent’ and ‘what they do during leisure time’. Answers were on a six-point scale, ranging from ‘never’ to ‘always’. The reliability of the scale is 0.76 and the mean score is 3.50 (SD = 0.75).
CHAPTER 5 - parental behaviour and young adults' alcohol use

Parental Alcohol Specific Monitoring. One item in the questionnaire asks ‘how often the parents were trying to find out how often the respondent drinks alcohol and how much’. Answers were on a six-point scale, ranging from ‘never’ to ‘always’.

Parental Drinking. Respondents indicated the number of alcoholic beverages their mothers and fathers consumed in the last seven days, at home and outside the home. The numbers of alcoholic beverages at home and outside home were summed up to indicate the number of drinks either of them had in the last week (Van Zundert et al., 2006).

Independence. One question assessed whether the respondents were living independent from their parents or caregivers and, if so, how much time (in months) had passed since they were living independent from their parents. The amount of months passed since the respondents were living independent from their parent was employed in the analyses.

Three outcome measures were employed in this study. They are described below, in the order in which they were analysed.

Weekly alcohol consumption. Weekly alcohol consumption was assessed by asking on which of the last seven days the respondent consumed alcohol, and if so, how many consumptions were taken. The summed-up total of the last seven days was used in the analyses (Engels, Knibbe & Drop, 1999a).

Heavy episodic drinking. Heavy drinking was assessed by asking how often in the last twelve months the respondent drank six or more standard glasses of alcohol. Answers varied from 1 “never” to 7 “more often than two times per week” on a seven-point scale.

Observed alcohol consumption. The number of glasses consumed in the 52 minutes time-out during the ad-lib drinking session was calculated. Soft-alcoholic and non-alcoholic drinks were counted, but only the count of soft-alcoholic drinks was used for this paper. If participants did not finish their drinks at the end of the session, we subtracted the volume of what was left from the total consumption. Further, because the type of glass of beer we used consists of less alcohol than the type of glass of wine, and was smaller than a standard glass, the number of glasses beer consumed was divided by 1.5. - insert Footnote 3 about here -

Results

Descriptive Analyses

Figure 1 displays the alcohol consumption of individuals from the 28 peer groups which joined our study. The average consumption in the group is indicated by the black mark and the standard deviation by the gray field. The total range in alcohol consumption in the group is specified by the line, except for individuals who significantly differ from the group average. As can be observed, the alcohol consumption patterns in the various groups differ greatly. Some groups are very homogeneous
in alcohol consumption, whereas other groups are more heterogeneous. Also great fluctuations in the total alcohol consumption per group occur.

Figure 1. Observed Alcohol Consumption by Respondent Group.

Only 4.3% of the respondents did not consume any alcoholic beverages in the bar lab. Alcohol consumption ranged from 0 to 7.5 glasses, with a mean of 2.75 (SD = 1.43). Strong gender differences were found: Men appeared to consume more alcoholic beverages (M = 3.31, SD = 1.45) than women (M = 2.02, SD = 1.02; t(221) = 7.41, p < .001). In terms of total consumption, adding up alcoholic and non-alcoholic consumptions, men in general appeared to consume more than women.

Correlations between Model Variables

Table 1 shows an overview of the correlations between the model variables. It shows that females experience more parental support and less alcohol specific monitoring. General monitoring and support are positively related, and also alcohol-specific monitoring is associated with general monitoring practices. Fathers’ and mothers’ alcohol consumption are positively associated, and mothers’ alcohol consumption is slightly negatively related to perceived support.

Parental support is weakly associated with lower scores on the alcohol variables. Alcohol-specific monitoring is associated with higher scores on the drinking measures. Concerning parents’
Table 1
Pearson Correlations between Predictors, Reported Alcohol Consumption and Observed Alcohol Consumption.

<table>
<thead>
<tr>
<th>Individual Predictor</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
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<th>6.</th>
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<th>9.</th>
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<tbody>
<tr>
<td>Gender</td>
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<td>Parental Predictors</td>
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<tr>
<td>Support</td>
<td>.146*</td>
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<tr>
<td>Monitoring</td>
<td>.106</td>
<td>.235**</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Alcohol Specific Monitoring</td>
<td>-.159*</td>
<td>.093</td>
<td>.289**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Alcohol Consumption Mother</td>
<td>-.073</td>
<td>-.156*</td>
<td>-.083</td>
<td>.023</td>
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<td></td>
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<tr>
<td>Alcohol Consumption Father</td>
<td>.057</td>
<td>-.091</td>
<td>-.077</td>
<td>.076</td>
<td>.347**</td>
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<td></td>
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<tr>
<td>Duration of Adol. Independence</td>
<td>.062</td>
<td>-.002</td>
<td>-.058</td>
<td>-.067</td>
<td>-.047</td>
<td>.073</td>
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<tr>
<td>Drinking Behaviour</td>
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<tr>
<td>Weekly Consumption</td>
<td>-.369**</td>
<td>-.151*</td>
<td>-.043</td>
<td>.267**</td>
<td>.153*</td>
<td>.216**</td>
<td>.024</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy Episodic Drinking</td>
<td>-.396**</td>
<td>-.100</td>
<td>-.107</td>
<td>.237**</td>
<td>.128</td>
<td>.151*</td>
<td>-.021</td>
<td>.599**</td>
<td></td>
</tr>
<tr>
<td>Observed</td>
<td>-.448**</td>
<td>-.182**</td>
<td>-.087</td>
<td>.184**</td>
<td>.018</td>
<td>-.032</td>
<td>-.143*</td>
<td>.393**</td>
<td>.408**</td>
</tr>
</tbody>
</table>

Note. * p < .05; ** p <
drinking, only weak associations exist with weekly alcohol consumption. Finally, the correlations
between the drinking measures are moderate to strong.

Parental Associations with Young Adult’s Alcohol Consumption: Multilevel Analyses

It is not valid to answer our research questions using plain regression analyses, even though they
are widely-used and easy to interpret. One of the conditions for doing regression analyses is that the
respondents’ data are independent. In our research design, in which young adults are invited to come
with their own peer group, this assumption is violated. This is illustrated by the intraclass correlation,
which shows that e.g. concerning observed drinking levels, a proportion of the variance can be
ascribed to differences between groups \( r = .46, p < .001 \). In research in which dependent (nested)
data are made use of, multilevel analyses are the appropriate way of analysing. In this study, we used
MLwiN 2.02 to answer our research questions. In Table 2, the results of these analyses are presented.
The fixed effects are the regression weights of the predicting variables, and the random effects indicate
the variance in the regression weights between groups. When a random effect is found, this means that
an independent variable has an effect on the dependent variable which varies between groups. We
applied a backward method in the multilevel analyses and maintained all values with a significance of
\( p<0.05 \) in the model.

More parental support appeared to be significantly associated with less weekly alcohol
consumption in the multilevel analyses. Alcohol-specific monitoring and paternal drinking showed
positive associations with young adult weekly alcohol consumption. Furthermore, random effects were
found from gender and alcohol specific monitoring on weekly alcohol consumption.

When looking at heavy episodic drinking, we found alcohol-specific monitoring and father’s
alcohol consumption was linked to heavier drinking. Gender was found to have a random effect.

Concerning drinking levels in a peer context, our analyses using observational data on drinking
levels revealed associations between parental support and young adult drinking levels. Furthermore,
alcohol specific monitoring was associated with higher levels of alcohol consumption. A main effect
was found for the young adult’s independence. The observed alcohol consumption was higher in case
the participants were living together with their parents, or had not been living separate from them for
too long. Young adults that had been living independent from their parents for a longer period of time
did not seem to be encouraged to drink more in the absence of their parents. The interaction we
identified (and standardised in MLwiN) indicates that especially the participants who were living with
their parents and were monitored specifically on alcohol-related subjects, were the ones that drank a
lot. Random effects were found for gender and alcohol specific monitoring on observed alcohol
consumption. This implies that these variables had different effects among groups.
## Table 2

*Multilevel Analyses on Young Adult Drinking Behaviour.*

<table>
<thead>
<tr>
<th></th>
<th>Weekly Consumption Values (SE)</th>
<th>Heavy Drinking Values (SE)</th>
<th>Observed Drinking Values (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>32.41 (6.38)</td>
<td>4.80 (0.24)</td>
<td>4.43 (0.64)</td>
</tr>
<tr>
<td>Gender</td>
<td>-8.05 (1.86)</td>
<td>-1.03 (0.22)</td>
<td>-0.74 (0.16)</td>
</tr>
<tr>
<td>Support</td>
<td>-5.11 (1.44)</td>
<td></td>
<td>-0.24 (0.12)</td>
</tr>
<tr>
<td>Monitoring</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Alc Specific Monit</td>
<td>2.74 (1.00)</td>
<td>0.26 (0.09)</td>
<td>0.04 (0.11)</td>
</tr>
<tr>
<td>Alc Cons Mother</td>
<td>0.27 (0.07)</td>
<td>0.02 (0.01)</td>
<td>-</td>
</tr>
<tr>
<td>Duration of Adol. Indep.</td>
<td>-</td>
<td>-</td>
<td>-0.03 (0.01)</td>
</tr>
<tr>
<td>Duration x Gender</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Duration x Support</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Duration x Monitoring</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Duration x Alc Spec Monitoring</td>
<td>-</td>
<td>-</td>
<td>0.43 (0.16)</td>
</tr>
<tr>
<td>Duration x Alc Cons Mother</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Duration x Alc Cons Father</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Random Effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-</td>
<td>-</td>
<td>0.87 (0.47)</td>
</tr>
<tr>
<td>Gender</td>
<td>32.18 (22.19)</td>
<td>0.55 (0.26)</td>
<td>0.15 (0.18)</td>
</tr>
<tr>
<td>Alc Specific Monitoring</td>
<td>11.40 (3.99)</td>
<td>-</td>
<td>0.05 (0.05)</td>
</tr>
<tr>
<td>Covariance Intercept-Gender</td>
<td>-</td>
<td>-</td>
<td>-0.37 (0.24)</td>
</tr>
<tr>
<td>Cov. Intercept-Alc Spec Monitoring</td>
<td>-</td>
<td>-</td>
<td>0.00 (0.12)</td>
</tr>
<tr>
<td>Cov. Gender-Alc Spec Monitoring</td>
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<td>-</td>
<td>-0.08 (0.06)</td>
</tr>
<tr>
<td><strong>Level 1</strong></td>
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<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>106.32 (11.38)</td>
<td>1.33 (0.13)</td>
<td>0.75 (0.09)</td>
</tr>
<tr>
<td>Deviance intercept-only model</td>
<td>1926.91</td>
<td>817.03</td>
<td>696.68</td>
</tr>
<tr>
<td>Deviance full model</td>
<td>1741.69</td>
<td>726.57</td>
<td>609.06</td>
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<tr>
<td>$\chi^2$ (as compared to empty model)</td>
<td>185.22</td>
<td>90.46</td>
<td>87.62</td>
</tr>
</tbody>
</table>

*Note.* N = 221. Presented values are significant at the 0.05 level, or main effects from a significant interaction effect. Non-significant values are omitted from the analyses. Alc Spec Monitoring = Alcohol Specific Monitoring. Cov. = Covariance.

## Discussion

In the current study, we found marginal associations between parental behaviours and drinking behaviour of young adults. Monitoring by means of parents soliciting information from their children seems to have a preventive effect on the occurrence of heavy episodic drinking, but not on absolute drinking levels. Alcohol-specific monitoring is related to all three dependent measures, but because the relationship is opposite from the direction one would expect - alcohol-specific monitoring leads to less drinking - we assume that the causal relationship is reverse. Parents probably react by asking questions about the alcohol consumption of their offspring, when the drinking of these youngsters is relatively heavy. This interpretation of the association between alcohol-specific socialization and child
drinking can be supported by recent cross-sectional research showing that parents who talk more frequently with their children on smoking and drinking issues, are more likely to have children who actually are engaged in smoking and drinking (Van der Vorst et al., 2005; Harakeh, Scholte, De Vries & Engels, 2005). These findings indicate that in most cases parents react towards involvement in substance use by their children, by increasing parental efforts, such as discussing the pros and cons of substance use. The monitoring practices that might result in lower consumption in situations where the parents have some control, disappear when young adults are in a context where only peers are around. In other Dutch studies (e.g., Engels & Van der Vorst, 2003), an association between parental monitoring and adolescent’s alcohol consumption was found, but usually younger respondents were studied. Monitoring may not be a successful method to control the drinking behaviour of a young adult.

Mother’s drinking is not related to any of the drinking measures, while father’s drinking seems to be related more strongly to drinking measures which represent alcohol consumption in general, rather than social drinking. An association between father’s drinking and observed drinking in the peer context is absent. It can be argued that the associations that were found between father’s drinking and participants drinking were shaped by the modelling that has taken place from father to child. On the other hand, it could be that a similar environment that is shared by parents and children may lead to certain habits in both parents and children. A third possibility is that this association is caused by genetic factors that influence individual drinking habits (Koopmans & Boomsma, 1995). The third explanation may be supported by the fact that father’s drinking is not related to drinking in a peer context.

Parental support is shown to be associated with weekly alcohol consumption and observed drinking. Possibly, support does not directly lead to lower alcohol consumption, but rather to a heightened resistance to peer influence. In that case less alcohol consumption in peer environments can be expected, but not outside peer environments. This would then be reflected in the absence of a significant contribution to heavy episodic drinking, which might be driven more by individual predictors, rather than social ones (even though the two are strongly interrelated; see e.g. Clapp & Shillington, 2001, Guilamo-Ramos et al., 2004). Recognize that again the associations reported may be causally reversed. Young persons who drink less might receive more support from their parents. This uncertainty about the direction of causality points at a weak spot in our research. The measures that were exploited in our questionnaire were assessed cross-sectionally, and even though the observed drinking has taken place after the assessment of the independent measures, the observed drinking will be correlated with past drinking, and this past drinking might have lead to parental reactions.

In this study, the parenting behaviours were assessed through the participants’ reports. Even though the participant’s perception of their parents’ behaviour may not have always been completely accurate, we consider the young adult’s perception at least as important as the actual parental behaviours. To give an example, perceiving a lot of support from the parents, might have beneficial
effects for the young adult, even if the received support is actually relatively low. However, it can be the case that the parenting practices that were conducted during the participant’s childhood might be a better predictor of drinking in adulthood. Parents may not be strongly engaged in concrete parenting anymore, especially if children live on their own.

Another possible weakness is that the observed peer groups mainly consisted of students, and their drinking habits and social interactions may be different from those of other groups in society. But, even though students do drink more alcohol than other groups in the same age group, researchers like Knudsen (2003) support the argument that young workers engage in drinking behaviours similar to those of college students.

A finding that draws attention is that men and woman show solid differences in alcohol consumption. Our findings show that this is especially the case in social drinking contexts. Social situations apparently result in larger differences in alcohol consumption of males and females. This could be the result from the fact that boys are more sensible to socialization in drinking by friends and other group members (Engels, Bot, Van der Vorst, Meeus & Granic, 2006). The fact that in case of concordant drinking, the fastest drinker sets the pace (Bruun, 1959) might add to this explanation, when this mainly concerns males. The differences in alcohol consumption between the groups and the differences in variance within the various groups can also largely be explained by the differences in gender composition between groups (Bot, Engels & Knibbe, 2005).

It can of course be disputed that our research setting is not naturalistic. Although we aimed to create an atmosphere in which people would react as natural as possible, which means as natural as they would be when they would be present in an ordinary pub, it is still a question whether we actually succeeded. There are some indications that we did. First, the cover up story worked quite well according to the pilot studies. In addition, but this is primarily based on personal impressions, the behavioural patterns exhibited in the 1h time-out session, are quite exemplary for normal behaviour in pub or bar, for instance, people laugh, play games, sometimes have conversations on rather intimate matters, make passes to each other, or watch TV. Second, there is also statistical evidence for the credibility of the setting. It might be possible not to find systematic overlap between what people normally drink and what people drink in this specific setting. If those who would normally drink substantially when being out, hardly drink in the bar lab setting, or vice versa, this would seriously conflict with the credibility of the setting. This was however not the case. Young people who reported to drink excessively and frequently in everyday life were more likely to consume a high number of drinks in this 1h time-out session in the bar lab. It could even be that the drinking in the 1h time-out session is a better indication of alcohol consumption in everyday life. Distortions of survey reports of drinking may be caused by e.g. individual difficulties to recall the number of drinks one had, but the amount of alcohol an individual drinks may also be affected by aspects like glass sizes, shapes, fill levels and ethanol strength (Kerr et al., 2004). In such cases the number of drinks reported may not be very informative, while in our study such variations are controlled for.
CHAPTER 5 - parental behaviour and young adults’ alcohol use

In sum, the current paper showed only limited associations between parental behaviours and young adult alcohol consumption. In particular in the analyses in which we included observational data on young adult’s drinking in a peer setting little variance was accounted for by parental behaviours. Perhaps the effects of parenting on their child’s drinking habits are primarily to be found in adolescence, and parenting behaviours in young adulthood are not really effective anymore when it comes to alcohol consumption. It could also be that asking young adults after the upbringing they received when they were a child would have lead to stronger results.

Whether young adults live dependent or independent from their parents, does not really make a difference in the associations between parenting practices and young people’s alcohol consumption. Further, one may wonder if the alcohol-specific monitoring, which was found to be associated with drinking, is an effective means in forcing young adults into healthy drinking patterns.

Even though our study did not explicitly focus on dangerous and unhealthy drinking patterns, the population we studied is one that is specifically known for its binge drinking practices. Factors that may be predictive of lower alcohol consumption should always be considered seriously. Drinking may be considered normative behaviour until a certain level (Leifman et al., 1995; Pape & Hammer, 1996), but keeping in mind people in life stages at high risk for binge drinking, such as young adults and especially students, it may be useful to start applying alcohol preventing parenting practices when children are still open to parental influence.
Footnotes

1. It is essential to mention that soft alcohol drinks in the Netherlands are relatively cheap (for example, in ordinary bars or restaurants, the price of a beer (.25 cl) usually does not exceed 2.00 euros). This implies that offering drinks for free does not result in a strong urge to drink per se for the majority of Dutch youths. Of course, if this study would have been conducted in cultures with a different drinking culture, offering drinks for free would probably lead to binge drinking in almost all of the participants. Nonetheless, still many students consumed a substantial number of drinks in this time-out session.

2. Group sessions differed in duration of the time-out session (between 52 and 58 minutes). Because the duration of this part of the study is of course related to the opportunities to drink alcohol, we decided to score a period of 52 minutes for all groups.

3. By not doing this we might underestimate alcohol consumption by women because they tend to drink more wine than beer in our observational study.
References


CHAPTER 5 - parental behaviour and young adults’ alcohol use


CHAPTER 5 - parental behaviour and young adults' alcohol use


CHAPTER 5 - parental behaviour and young adults’ alcohol use
CHAPTER 6

young adults’ alcohol drinking: the predictive value of personality when peers come around

*Resubmitted for publication as:*
Abstract

This study examined whether personality traits and peer drinking affect drinking in young adults. Data were analysed from a study that was conducted in a ‘bar laboratory’ in which ad-lib drinking of peer groups was observed. The findings indicate that extraversion is moderately associated with self-reported daily drinking, while low emotional stability is moderately associated with alcohol-related problems. With regard to drinking in the observational drinking setting, personality is not associated with young adults’ actual drinking. Further, peer drinking levels were strongly related to young adults’ drinking. Besides, agreeableness interacted with the effect of peer drinking on young adults’ drinking, in such a way that agreeable individuals adapt their actual drinking more than others when socializing in a high or a low drinking peer group. We conclude that drinking in a peer context plays a major role in forming young adults’ drinking, irrespective of personality. However, personality (i.e. agreeableness) plays a role in the extent to which an individual adapts to peer drinking norms.
CHAPTER 6 - the predictive value of personality

Introduction

Alcohol use among adolescents and young adults is widespread. Statistics indicate an increase of alcohol drinking in Europe, particularly among adolescents and young adults. Youngsters in the Netherlands are among the most frequent and heavy drinkers [1, 2]. This raises concerns because young persons’ drinking is associated with adverse consequences [3]. Successful efforts to limit the drinking of young persons’ may be achieved by understanding the social and personal antecedents of their drinking. The present study examines whether personality traits and peer drinking affect drinking in young adults.

Personality

One way of describing personality is by using the Big-Five. The Big-Five is an organization of personality traits in term of five basic dimensions: Extraversion, Conscientiousness, Agreeableness, Emotional Stability, and Openness to Experience [4, 5]. These traits may have important consequences for a broad range of behavioural outcomes, including alcohol use. Some personality traits are known to be related to young persons’ alcohol use. For instance, those scoring low on conscientiousness [6 – 11], high on extraversion [7, 8], low on emotional stability [7, 9] and low on agreeableness [10, 11] were more likely to drink alcohol. On the other hand, young people scoring high on agreeableness have also been found to drink more alcohol [6]. In contrast, studies have also shown a lack of relation between personality traits and young persons’ drinking. For example, those scoring high on extraversion [6, 9, 10], low on extraversion [11], low on emotional stability [6, 9] and high on openness to experience [9] have not been found to drink more alcohol. Inconsistent findings concerning the relation between personality traits and young persons’ drinking, make it an unresolved topic.

Peer Influences

To better understand the relation between personality and young persons’ drinking, peer affiliation should be taken into account. The use of alcohol by peers is widely believed to be one of the major sources of initiation and persistence in alcohol consumption among adolescents [12, 13]. In many theories, such as the social learning theory [14], theory of planned behaviour [15], peer cluster theory [16] and social development model [17], peers are postulated as an important source of influence. Peer influence is a general term for direct and indirect mechanisms that shape young persons’ alcohol consumption, e.g. modelling alcohol use, shaping norms, attitudes and values, and providing opportunities and support for alcohol use [18]. With these theories in mind it seems logical to reason that peer influence is a major determinant of individual drinking. However, longitudinal studies, which to allow control for previous alcohol use and peer selection processes, show small effects of peer use on adolescent use over time [19 – 21].

A possible reason for the relatively low magnitude of peer influence may be that most of the data on adolescents’ peer relations and alcohol use was collected by means of questionnaires. A
criticism of most survey research is that investigation into adolescents’ peer relations and their alcohol use takes place in situations (such as schools and homes) which do not reflect the realistic context in which young adults drink. This means that they have to recall what happens in a ‘real’ drinking context, which may lead to a discrepancy between how people think they are being influenced and the actual processes of peer influences. The few studies which have observed drinking in a naturalistic setting managed to reliably assess the social processes in young persons’ drinking [22 – 24]. By using a design in which drinking is observed in a bar setting, they were able to capture actual processes which influence young adults’ alcohol drinking. We argue the need to study social drinking of young people in a naturalistic setting.

**Individual Differences in Susceptibility to Peer influences**

Not all young people may be affected in similar ways by peers, e.g. some may be more susceptible to peer influence than others [25]. Engels et al. [26] report that highly extraverted children have an elevated risk for later alcohol use when these persons associate with alcohol users, and Gullone and Moore [6] argue that agreeable individuals are more vulnerable to peer influence. Poelen et al. [27], however, did not find an interaction effect of personality and peer influence on the individual alcohol consumption of adolescents. With the exception of the latter study, to our knowledge, few have explored the interaction between personality and peer influence in relation to drinking. Perhaps, based on their need for social contact, those high on extraversion might drink more when in the company of peers, or individuals low on emotional stability might drink more when in a peer group because of social anxiety.

In the present study, we tested two hypotheses. First, we hypothesised that personality, in particular high on extraversion and low on emotional stability, is associated with daily alcohol consumption, alcohol-related problems and drinking in a social setting. The second hypothesis concerns the interaction between peer alcohol use and personality. We hypothesised that an association between peer drinking and individual drinking is moderated by personality. By observing personal and socio-environmental factors we aim to gain more insight into the factors that contribute to the relation between personality and young persons’ alcohol use.

**Method**

**Participants**

Undergraduate students were invited to bring six to eight friends with them to this research project. As a result, a total of 21 peer groups participated; of these, 18 groups consisted of eight persons each. A total of 165 young adults volunteered to participate, 88 men (53%) and 77 women (47%) with an age range of 18 to 28 years (mean 20.86 years). Of all participants, 128 (78%) had at least finished pre-university education, meaning that this study involved participants with a relatively
CHAPTER 6 - the predictive value of personality

high educational level. Group composition varied from all men (5%) and all women (5%), to mixed sex (90%).

**Procedure**

The participants were invited to join a study on the effects of alcohol on group discussion and judgement. This was used as a cover story to avoid participants becoming aware of the actual goal of this study, i.e. to examine group processes in alcohol consumption in a pub setting. Each group was invited to the bar laboratory for two separate sessions in a 1-year period; all sessions were held during the hours of 19.00 and 21.00. In this paper, data from the second session are used. The session lasted two hours and took place in a bar laboratory at the Radboud University Nijmegen. The bar laboratory was furnished as an ordinary pub, with a bar, stools, tables, chairs, TV/video and indoor games (e.g. table football and billiards). Popular music was broadcasted during the session. In order to prevent confounding effects, the volume and type of music were the same in all sessions. The participants were told that this bar was rented from the university and that it was normally used by the university staff for their social occasions.

After the participants had entered the bar laboratory, they were asked to fill in a questionnaire which contained questions about their personality and drinking patterns. After completing the questionnaire, the participants were asked to evaluate 10 people whose pictures were shown on a TV screen. Each of the participants wrote down whether or not they thought these people appeared to be attractive and intelligent. After this, 30 seconds was allocated per picture to discuss their opinions about each picture with the other group members. The task was constructed such that it was not difficult, and by asking for the participants’ judgements it was impossible to give wrong answers. This construction made allowed to eliminate confounding effects of drinking less because of an urge to do well on the task. After completing these tasks, the participants had a 50-55 minute break which was to be spent in the bar laboratory. During this period they could play games and/or watch TV, or converse with others. Drinks could be ordered at the bar. To avoid influence from the bartender and because it would be unethical to encourage participants to drink, the bartender was not allowed to ask participants if they would like a drink. All available consumptions, i.e. beer, wine and non-alcoholic drinks were available for free. In the Netherlands, beer and wine are relatively cheap, e.g. a glass of beer (0.25 centilitre) costs about 2.00 Euros. This means that, for most Dutch adolescents, offering drinks for free would not lead to excessive drinking. Besides the drinks, nuts and crisps were also freely available. After the 50-55 minute break a second task, which was similar to the first one (but with different pictures) was completed. Finally, after two hours, the participants went home by taxi. At the end of the entire experiment, all participants were debriefed about the purpose of this study.

All of the two-hour sessions were audio / videotaped. Two cameras were used (one flexible with zoom, and one steady), concealed in two corners of the bar lab. Participants were told in advance that they would be observed during the entire experiment; all participants gave permission to use the observational data for our study. Pilot studies were conducted beforehand to verify the credibility of
the setting and procedure; these participants strongly endorsed the credibility of the setting and not one of the 32 participants in the pilot studies guessed the actual aim of the study. The medical ethics committee (CCMO Arnhem-Nijmegen) approved the study protocol.

**Measures**

**Personality.** A 30-item version [28] of the Big-Five Personality Questionnaire was used to assess the factors of the Big-Five factor structure [4]. The questionnaire has five dimensions, extraversion (α in this study = .87), agreeableness (α = .74), conscientiousness (α = .91), emotional stability (α = .82), and openness to experience (α = .70). Each dimension is measured by six items on a seven-point scale, ranging from 1 “does not apply at all” to 7 “applies totally”. Examples of items are talkative (extraversion), friendly (agreeableness), orderly (conscientiousness), irritable (emotional stability) and creative (openness to experience).

**Drinking patterns.** Daily alcohol use was assessed by self-reports and was measured by asking participants to indicate the quantity of alcohol consumptions during the last seven days [29]. The mean score on daily drinking was used in the current analyses.

**Alcohol-related problems.** A short version of the severity of problem drinking scale [30] was employed to assess the level of problems due to alcohol consumption. Factor analyses with LISREL 8 on a large data set of 6205 adults showed a clear one-factor solution for the total scale. A screening instrument of six items matched satisfactorily with scores on the total scale consisting of 15 items ($r^2 = 0.92$). Examples of the items are: ‘Have you ever tried to quit drinking without being successful?’ and ‘Did your partner or close relatives ever worry about your alcohol consumption, or complain about it?’ Answers were provided on a dichotomous scale (yes/no).

**Drinking behaviour (observational data).** To assess the amount of alcohol consumed by each participant, their drinking behaviour during the 50-55 minute break was observed and counted per person. The average content of the beer glasses was 160 ml and the content of the wine glasses was 110 ml. In our study, the beer contained 5% alcohol, which means that on average a glass of beer contained 8 ml pure alcohol. The wine contained 11 to 12% alcohol, thus a glass of wine contained from 12.1 to 13.2 ml pure alcohol. Because of the difference in ml pure alcohol between beer and wine, we divided the number of glasses of beer consumed by 1.5. When participants did not finish their drinks at the end of the break, the remaining volume was subtracted from the total consumption.

**Strategy for Analyses.**

Data from the questionnaires were entered in SPSS version 14.0. The video and audio recordings were coded in The Observer 5.0 (Noldus Information Technology b.v., Wageningen, the Netherlands). We assessed how many drinks each person consumed, when, in what order, with whom, and during what activity. The coding was conducted by five trained research assistants (for data on reliability see Bot et al. [22]). In this paper we focused on the total number of alcoholic drinks consumed.
Three groups were omitted from analyses, one because of technical problems, the other two because the group members decided to play a drinking game. The data of these latter groups could not be used, because individual drinking behaviour could not be predicted by personality. As a result 18 groups were used in the final analyses.

We first calculated the bivariate Pearson’s correlations to examine the relations between the variables tested in this study. Next, we employed regression analyses to test the impact of personality on daily drinking, alcohol-related problems and observed drinking. Since men drink more than women [2] we corrected for sex in multivariate analyses. Finally we used multilevel analyses (MLwiN 2.02) to test the impact of alcohol use by peers on observed drinking, and to test whether this relation is moderated by personality. Multilevel analyses enable to investigate if effects vary due to differences between groups. Because we assumed that observed drinking is partly dependent on individual daily alcohol use, we controlled for self-reported data on daily alcohol consumption.

Results

Descriptive Statistics

A total of 140 young adults, 77 men (55%) and 63 women (45%), were involved in this study. One group was comprised of men only and one by women only. On average, the participants consumed 2.32 alcohol drinks a day (SD = 2.26). The average number of observed alcohol drinks consumed during the 50-55 minute break in the bar laboratory was 2.39 (SD = 1.72).

Outcomes of an ANOVA demonstrated that males reported a higher amount of daily alcohol consumption than females [F (1.138) = 21.58, \( p < .001 \)]. On average men consumed 3.07 (SD = 2.62) and women 1.40 (SD = 1.23) alcoholic drinks a day. The observed data also revealed a higher amount of alcohol consumption for males compared to females [F (1.138) = 36.08, \( p < .001 \)]; the average consumption for men was 3.09 (SD = 1.82) and for women 1.52 (SD = 1.09).

Correlations

Table 1 shows that the correlations between peer drinking and observed drinking were significant, i.e. that participants with high drinking levels were more likely to associate with a high drinking peer group. Furthermore, those who reported more daily alcohol use also reported more alcohol-related problems and also had higher levels of consumption during the ad-lib drinking session. Further, more men were involved in drinking in the bar lab and also reported more daily drinking and alcohol-related problems. Extraversion and emotional stability were related to increased levels of daily alcohol consumption. No significant correlations were found between personality and alcohol-related problems. Women scored lower emotional stability and openness to experience.
Table 1
Pearson’s Correlations between Alcohol Consumption, Alcohol-Related Problems, Sex and Personality.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Observed drinking</td>
<td>.593**</td>
<td>.411**</td>
<td>.331**</td>
<td>-.455*</td>
<td>.128</td>
<td>-.095</td>
<td>-.055</td>
<td>.112</td>
<td>.021</td>
<td></td>
</tr>
<tr>
<td>(2) Observed peer drinking</td>
<td>.210*</td>
<td>.194*</td>
<td>-.283**</td>
<td>.096</td>
<td>-.036</td>
<td>.050</td>
<td>-.004</td>
<td>.085</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Daily alcohol consumption</td>
<td>.396**</td>
<td>-.368**</td>
<td>.189*</td>
<td>-.024</td>
<td>-.165</td>
<td>.208*</td>
<td>.052</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>(4) Alcohol-related problems</td>
<td>-.207*</td>
<td>-.029</td>
<td>-.058</td>
<td>-.067</td>
<td>-.115</td>
<td>.019</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(5) Sex</td>
<td>-.029</td>
<td>.080</td>
<td>.107</td>
<td>-.322**</td>
<td>-.170*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6) Extraversion</td>
<td>.165</td>
<td>-.087</td>
<td>.149</td>
<td>.173*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7) Agreeableness</td>
<td></td>
<td>.154</td>
<td>.033</td>
<td>-.057</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(8) Conscientiousness</td>
<td></td>
<td></td>
<td>.008</td>
<td>-.057</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(9) Emotional stability</td>
<td></td>
<td></td>
<td></td>
<td>.255**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(10) Openness to experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N= 140. *p ≤ .05, **p ≤ .01, ***p ≤ .001.
Multiple Regression on Sex, Personality, Daily Alcohol Consumption, Alcohol-Related Problems, and Observed Drinking

Multiple regression analyses were conducted to examine the effects of personality on daily alcohol use, alcohol-related problems and observed drinking. Table 2 shows that sex predicts daily alcohol consumption, alcohol-related problems and observed drinking (step 1). After controlling for sex, daily alcohol consumption was predicted by extraversion (step 2). Thus, a higher level of extraversion was positively associated with daily drinking. Alcohol-related problems were predicted by low emotional stability (step 2). When predicting observed alcohol consumption, no relations were found between personality and observed drinking (step 2). This suggests that personality (i.e. extraversion) predicts daily drinking, but when drinking in a specific situation personality does not predict drinking. After conducting multilevel analyses to correct for differences between the groups, the pattern of these above findings remained the same.

Table 2
Multiple Regression Analyses: Associations between Sex, Personality, Daily Alcohol Consumption, Alcohol-Related Problems and Observed Drinking.

<table>
<thead>
<tr>
<th></th>
<th>Daily Alcohol Consumption</th>
<th>Alcohol-Related Problems</th>
<th>Observed Drinking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>Total R²</td>
<td>Beta</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-.368***</td>
<td>.135***</td>
<td>-.207*</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-.332***</td>
<td>-.259**</td>
<td>-.471***</td>
</tr>
<tr>
<td>Extraversion</td>
<td>.165*</td>
<td>-.006</td>
<td>.142</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>.014</td>
<td>-.033</td>
<td>-.065</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>-.122</td>
<td>-.030</td>
<td>.015</td>
</tr>
<tr>
<td>Emotional stability</td>
<td>.095</td>
<td>-.204*</td>
<td>-.046</td>
</tr>
<tr>
<td>Openness to experience</td>
<td>-.069</td>
<td>.189*</td>
<td>.037</td>
</tr>
</tbody>
</table>

*Note. N= 140. *p ≤ .05, **p ≤ .01, ***p ≤ .001.
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Table 3
Multilevel Analyses on Observed Drinking by Sex, Daily Alcohol Consumption, Peer Drinking and Personality.

<table>
<thead>
<tr>
<th>Fixed Effects</th>
<th>Observed Drinking Values (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.979 (1.081)**</td>
</tr>
<tr>
<td>Sex</td>
<td>-0.692 (0.231)**</td>
</tr>
<tr>
<td>Daily alcohol consumption</td>
<td>0.184 (0.049)**</td>
</tr>
<tr>
<td>Peer drinking</td>
<td>0.703 (0.089)*****</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.290 (0.185)</td>
</tr>
<tr>
<td>Peer drinking X Agreeableness</td>
<td>0.238 (0.101)*</td>
</tr>
</tbody>
</table>

Model

| Deviance       | 448.954 |
| Deviance empty model | 504.938 |
| $\chi^2$ (Δ df = 5) | 55.984*** |

Note. N= 140. *p ≤ .05, **p ≤ .01, ***p ≤ .001.

Figure 1. Interaction between agreeableness and peer drinking on observed drinking. N=140.
Multilevel Analyses on Observed Drinking by Sex, Daily Alcohol Consumption, Peer Drinking and Personality

Table 3 presents the results of multilevel analyses examining the effects of peer alcohol consumption and personality on observed drinking. Besides sex, self-reported daily alcohol use and peer drinking are related to observed drinking. Personality traits did not predict observed drinking. Furthermore, an interaction between peer drinking and agreeableness in relation to observed drinking was found (see Figure 1). This implies that agreeable persons differ more than others in drinking when socialising in a high as compared to a low drinking peer group. This indicates that agreeable persons are more adaptive to peer drinking compared to persons low on agreeableness. The other personality traits did not interact with peer drinking in relation to observed drinking. In sum, we found fixed effects for a moderating role of agreeableness in the relation between peer drinking and observed drinking. No random effects were found, thus the above-mentioned results did not vary between groups.

Discussion

The aim of the present study was to obtain more insight into the relation between personality and young adults’ drinking. First, the findings indicate that extraversion is associated with daily alcohol use, while low emotional stability is associated with alcohol-related problems. These findings are in line with a study by Ruiz et al. [9]. Our findings are consistent with what would be expected on the basis of the Big-Five trait descriptions. For example, extraverted individuals are more likely to seek excitement and are assumed to be more sociable [5], hence report more daily drinking. Emotionally instable individuals are more anxious, tense and impulsive [5], and may have more alcohol-related problems. Personality was, however, not related to ad-lib drinking in the bar lab.

Some evidence has been found for the relation between personality and alcohol use [e.g., 6, 10, 11, 31]. There are a few explanations for the differences in findings. For instance, research has primarily focused on problem drinking (such as alcohol-related problems, alcohol dependence or alcohol use disorders) whereas little is known about the role of personality in social (moderate) drinking. Moreover, personality disorders (i.e. antisocial, dependent, and histronic) are highly associated with problem drinking [32]. Nonetheless, these studies do not imply that in non-clinical samples personality is related to social drinking. Because we focused on both social and problem drinking, our findings obviously revealed a different pattern of relations than when the focus had been solely on problem drinking in clinical samples.

Second, our findings indicate that peer drinking strongly relates to actual drinking. This concurs with many studies in which similarities in drinking between peers were found. For instance, survey studies [20], observational studies [23] and studies which examined young persons’ drinking in public drinking places [33] showed strong similarities in drinking between peers. Further, we found
that agreeable adolescents adapt their actual drinking significantly more than others when socializing in a high or a low drinking peer group. These findings support a moderating role of personality in the relation between peer drinking and individual drinking. Our findings indicate that agreeable individuals are more susceptible to peer influence than individuals low on agreeableness. Agreeableness has been described as manifesting in self-effacing behaviour [34], which can be a reason for higher susceptibility to peer influence. By means of an observational or experimental design, future studies could explore the relation between personality and peer influence on alcohol use in different situations. For instance, we could study the moderating role of personality by extending the experiment by Leid and Marlatt [35] in which participants were assigned to different groups and confederates were used as a drinking model. Leid and Marlatt [35] found strong evidence for modelling effects on alcohol consumption. Therefore, the present experiment seems to provide a good design to examine the moderating role of personality in the association between peer influence (i.e. modelling) and alcohol consumption.

**Personality and observed drinking**

It is meaningful to speculate why we found a lack of support for the association between personality and observed drinking. A plausible explanation is that because most young adults drink for social facilitation [36] and drinking in a social setting is such a (perceived) normative [37] behaviour, personality may no longer have a predictive value. In sum, we argue that the lack of relations between personality and observed drinking is due to outcomes of both conformity to normative behaviour and processes of social facilitation, in which peer interaction plays such a major role that individual differences carry little weight.

Another explanation for the lack of significance between personality and observed drinking may be that the Big-Five is too broad to be associated with drinking; perhaps facets of the Big-Five are more suitable to predict drinking. Ruiz et al. [9] show some associations between some Big-Five facets and young persons’ drinking, for instance impulsiveness (low emotional stability), excitement seeking (high extraversion), low straightforwardness (low agreeableness) and low achievement striving (low conscientiousness). Thus, a more detailed approach to personality assessment may be more appropriate in predicting alcohol use.

**Further studies**

Despite the lack of support for the association between personality and young persons’ drinking, the role of personality in the selection of drinking peer contexts may be a valuable topic to study. Young adults acquire new peer contacts with individuals who have similar drinking styles and avoid or terminate contacts with peers because of differences in drinking [21]. Personality may play a central role in these selection processes. For instance, extraverts may acquire a social, alcohol using and out-going peer context, whereas introverts may avoid this context. Engels et al. [38] found that sociable and self-confident adolescents are more likely to spend time with friends at parties where alcohol is consumed. This concurs with the Big-Five trait description, in which extraverts have been
described as sociable and self-confident [5]. Moreover, personality may play a role in the initial phase of meeting new peers in a drinking context. Experimental research using confederates has shown that, in initial peer meeting, the nature of social interaction plays an important role in imitation of drinking [39] and smoking [40]. In a review on this topic, Quigley and Collins [41] conclude that individual characteristics moderate the imitation process of alcohol use. In addition, personality may be one of these moderators. Imitation effects may be stronger when, in initial meetings, highly agreeable individuals interact with a warm social peer, as compared to individuals low on agreeableness.

Another way, in which personality and social environment may interact with young persons’ drinking, stems from the personality composition of groups. For instance, the exuberance and sociability of extraverts can lead to enhanced levels of drinking in groups mainly composed of extraverts [Footnote 1]. Besides, it may also be worthwhile to study differences within group personality traits and their relation to drinking. For example, certain traits may cause individuals to function as instigators of drinking, whereas others may function as recipients.

Limitations

Some limitations of this study should be addressed. First, only acquainted peer groups entered the bar lab. In this case, selection processes have already taken place and social as well as drinking behaviours may be more habitual, in which people more or less know what to expect from each other. Hence, personality may no longer have much impact. However, young persons’ drinking in acquainted peer groups – as we studied it - is a reflection of the prevailing situation in real life. Second, because only undergraduate students participated in this experiment, our findings can not be generalised to other subgroups of young people. Because drinking is not restricted to the student population, but is common among many young persons [2], further studies on the determinants of drinking should involve additional subgroups of young people. Third, although we assumed that the one-hour drinking session was similar to a ‘real life’ bar visit, not all features of our setting were similar to a normal bar visit. For instance, both the soft drinks and alcoholic drinks were free; although we believe that this had a minor impact because in the Netherlands alcoholic drinks are relatively cheap. Nevertheless, one can argue that offering drinks for free made it easier for the participants to consume alcohol. Fourth, because we did not use a longitudinal design we can not draw definite conclusions about the predictive value of personality.

Conclusion

We conclude that drinking in a peer context plays a major role in forming young adults’ drinking behaviour, irrespective of personality. In addition, personality (i.e. agreeableness) interacts with the peer context when forming young adults’ drinking behaviour. Thus, personality plays a role in the extent to which an individual adapts to the level of alcohol consumed by peers. Our findings underline the moderating role of personality in predicting young persons’ drinking. Further studies should examine personality as a moderator in different drinking contexts. Our findings support a model in which underlying processes of peer drinking will be examined, whereby personality may
play an important role in the selection of a peer context and imitation in initial peer meetings. Therefore, future studies should take a closer look at personality in relation to these processes.
Footnote

1 We tested this hypothesis, but the results did not confirm our ideas.
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References


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CHAPTER 7

the effects of alcohol expectancies on drinking behaviour in peer groups: observations in a naturalistic setting

Published as:
CHAPTER 7 – the effects of alcohol expectancies

Abstract

Aims To study the functionality of alcohol expectancies in predicting drinking behaviour in existing peer groups of young adults in a ‘naturalistic’ setting.

Design and Setting Young adults were invited to join an experiment with their peer group in a bar annex laboratory. During a ‘break’ of 50 minutes in this experiment, their activities, social behaviour and drinking behaviour were observed with digital video and audio equipment.

Participants 28 peer groups were involved in this study. A peer group consisted of 7-9 persons, with relationships ranging from intimate relations and close friendships to being acquaintances. A total of 238 participants are involved.

Measurements The information of the drinking behaviour from observations, and questionnaire data on alcohol expectancies, provide the opportunity to look at how and which expectancies are related to actual drinking patterns. Multiple regression and multilevel analyses were applied.

Findings Expectancies on the positive and arousing effects of alcohol consumption were related to alcohol consumption in a naturalistic, social drinking situation, up and above group effects of drinking. Expectancies on the negative and sedative effects of drinking, however, were not related to drinking.

Conclusions Explanations are provided for the findings. The findings may be the result of either the social nature of the setting, selection effects that may occur through involvement in this study, or involvement in social drinking whatsoever. Limitations and directions for future studies are discussed.
Research on alcohol expectancies has become central in theoretical models explaining adolescent and adult involvement in drinking patterns, alcohol misuse and alcohol-related problems (Abrams & Niaura, 1987; Leigh, 1989). Since Brown, Goldman, Inn and Anderson (1980) developed the Alcohol Expectancy Questionnaire (AEQ) assessing individual perceptions on a variety of positive alcohol related consequences, many studies have been focusing on the link between alcohol expectancies and drinking habits. In addition, researchers differentiated positive and negative expectancies and showed that in both social and problem drinkers, negative expectancies contributed in the prediction of less drinking (e.g., Fromme, Stroot, & Kaplan, 1993). An example concerning the increasing attention on alcohol expectancies, is a study by George et al. (1995) who thoroughly tested the psychometric properties of an instrument consisting of 8 subscales on specific positively (e.g., enhancement, sexual, relaxation) and negatively (e.g., loss of power, loss of control) perceived outcomes of drinking. In line with these studies refining the measurement of alcohol expectancies some others suggested to distinguish between expectancies with regard to the effects of various levels of alcohol consumption (low and high doses of alcohol, Wiers et al., 1997) or to differentiate between explicit and implicit alcohol expectancies (e.g., Stacy, 1997; Wilson, Lindsey & Schooler, 2000, Wiers et al., 2002).

The empirical evidence for the effectiveness of alcohol expectancies to explain variation in drinking patterns appears to be quite substantial in a large number of cross-sectional studies. Studies among adolescents (e.g., Christiansen & Goldman, 1983; Wiers et al., 1997) and adults (e.g., Cooper et al., 1988) found support for moderate to strong associations between alcohol expectancies and alcohol consumption. For instance, Leigh (1989) found that expectancies accounted for 1-3% of the variance in frequency of drinking and 2-3% of the variance in quantity per occasion. In a cross-sectional study among adult social drinkers, Lee, Greely, and Oei (1999) reported that positive and negative expectancies are differentially related to weekly consumption, frequency of drinking, and quantity consumed per drinking session. Individuals who expected alcohol use to increase assertiveness and cognitive impairment, reported a larger quantity of drinking per session. However, these specific expectancies were not related to the frequency of drinking in general. Their findings implied that quantity per session resulted in the strongest link between specific expectancies and alcohol consumption.

Strong evidence for the importance of alcohol expectancies can be found in prospective research, in which tests on the effects of expectancies on changes in drinking patterns, such as initiation, maintenance and problematic drinking, are conducted. Contrasting findings are reported in longitudinal studies on the effects of alcohol expectancies on subsequent changes in alcohol consumption over time. Some studies found moderate associations between expectancies and drinking over a 1-year period (Goldman, Greenbaum & Darkes, 1997), whereas others indicated that alcohol expectancies are primarily related to specific stages of drinking (e.g., onset of drinking among young
people; Aas et al., 1998), to specific drinking habits (e.g., to alcohol-related consequences but not to alcohol use; Reese, Chassin & Molina, 1994), or to drinking by young adults (e.g., Sher, Wood, Wood & Raiskin, 1996; Stacy, Newcomb & Bentler, 1993). Also, some prospective studies found no effect of alcohol expectancies on changes in drinking over time (see review by Jones, Corbin & Fromme, 2001). To give a few examples, Carey (1995) found in her short-term longitudinal study that expectancies accounted for an additional 1% (frequency of drinking) and 2% (quantity of drinking) in the prediction of future drinking when gender and previous drinking levels were taken into account. Studies by Christiansen (1989) and Kilbey, Downey and Breslau (1998) demonstrated that the expectation of drinking leading to enhanced social performance was significant in the prediction of problematic alcohol use over time.

More recently, it has been suggested that assessment of expectancies might be improved by not examining different subtypes of positive or negative expectancies, but to perceive expectancies as nodes in a semantic network (Wiers et al., 2002). In this approach, using multidimensional scaling, expectancies were found to differ on two dimensions: positive-negative and arousal-sedation (see also Rather et al., 1992). In addition, there is evidence of underlying distinct neurobiological processes of these two dimensions and that the sensitised initial arousal responses to drug-related stimuli are crucial in the development of problem drinking and addiction (Robinson & Berridge, 2001). Yet, only a few studies have used this approach in empirical research. In a 1-month prospective study, Wiers et al. (2002) demonstrated that scores on scales based on these two dimensions predicted the quantity of drinking in young adults over time.

The overwhelming majority of studies use self-report data on drinking levels in their investigation of the role of expectancies in the course of drinking (Jones, Corbin & Fromme, 2001; some exceptions: Sharkansky & Finn, 1998; Wall, Thrussell & Lalonde, 2003). Individuals are reporting their alcohol consumption, in terms of quantity or frequency of drinking, heavy drinking or problem drinking. One of the problems with this approach is that information is only gathered on an aggregative level. For instance, by using assessments of quantity of drinking in the past four weeks, or frequency of 6+ drinking in the past year, it remains unknown whether outcome expectancies predict actual drinking patterns (see also Mohr et al., 2001). In other words, do expectancies really predict particular drinking patterns in real life settings, specifically that of young people’s social drinking in their peer group in a pub? This might be a very relevant question, since the lion’s share of (late) adolescent drinking takes place in peer contexts and especially in the adolescent age group, young people are highly sensitive to peer influence. The individual expectancies concerning the use of alcohol may operate differently in affecting drinking in these social situations, and it is realistic to presume that the relation between alcohol expectancies and social drinking cannot be assessed appropriately when applying questionnaires.

We might expect that those individuals who attribute a positive valence to outcomes of alcohol are more likely to consume alcohol in social settings, such as public drinking places, in which they
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drink with their peers, whereas individuals who attribute a negative valence to outcomes of drinking (feelings of depression, low self-worth, loneliness) might be more likely to drink solitary and not in a social setting with friends. A second, related, problem is that self-reports on alcohol consumption might be biased. In essence, observational methods are probably among one of the most accurate ways to assess people’s drinking habits (Van de Goor, 1990). In our opinion, the theoretical value of the alcohol expectancy approach will be particularly high if expectancies predict drinking behaviour in naturalistic drinking settings, in which alcohol consumption is reliably measured.

The majority of research into alcohol consumption of young people does not focus on drinking habits in naturalistic settings. Nonetheless, some experimental studies with a balanced placebo design have looked at the function of expectancies in the aetiology of alcohol consumption while doing their studies in a bar laboratory setting (see review by McKay & Schare, 1999). In addition, some of the classic studies on the effects of social modelling or imitation have also used a bar lab setting (see review by Quigley & Collins, 1999). In this approach, respondents were asked to visit a bar laboratory at the university, together with another person who was actually a ‘confederate’, i.e. part of the research team. Central in these studies was the question whether the respondent would subsequently imitate the alcohol consumption initiated by the confederate, in terms of timing and pace of drinking. An important limitation of the modelling studies is that they are not conducted in groups of people who already knew each other in advance. It is very likely that particularly in existing social groups, strong modelling or imitation effects occur. However, systematic observations of drinking in existing social groups have rarely been conducted. One of the few exceptions is the work of Ketttil Bruun (1959), who observed drinking habits in existing social groups and, for instance, examined the role of group cohesion and social interactions in alcohol consumption of adults. Therefore, if we aim to study the effects of outcome expectancies on actual drinking, it is crucial to scrutinize drinking behaviour in its normal social habitat. Translated into young people’s drinking habits this might refer to drinking in peer groups of friends in settings in which they would normally drink. Since 80% of the total consumption of 18 to 24-year-olds in the Netherlands is concentrated in public drinking places, such as pubs, discos, and bars (Knibbe, Van De Goor & Oostveen, 1991), this might be the ideal setting to study effects of expectancies on drinking habits.

In the present study, we conducted systematic observations of the individual’s alcohol consumption in existing social groups of young people in a naturalistic setting. More specific, social and drinking behaviours of 238 young people in their own peer group of friends and acquaintances was observed during an ad-lib drinking session in a bar lab at the University of Nijmegen. The 238 participants formed 30 peer groups consisting of 7 to 9 friends each. Outcome expectancies were assessed prior to the ad-lib drinking session. We predicted that in this context of drinking in a bar with a group of friends and acquaintances, differences in individual drinking levels would be primarily affected by positive expectancies on the effects of alcohol and by expectancies on the level of arousal that alcohol instigates. In contrast, we assumed that expectancies related to the negative effects of
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drinking on emotional adjustment (being depressed, unhappy) and expectancies related to the sedative effects of alcohol (becoming silent, sleepy) would not affect drinking levels in this social setting.

Method

Participants

Participants were 238 young adults who volunteered to participate. They entered our laboratory setting as a group in a sense that 1 undergraduate student invited 6 to 8 friends to become involved in this research project. A total of 30 peer groups enrolled. The majority of the groups (n = 27) consisted of 8 persons. A total of 128 men (54%) and 110 women (46%) participated, ranging in age from 18 to 28 years old. 203 (85%) participants had at least finished pre-university education, which indicates that this study involved participants with a relatively high educational level. 94 participants (40%) considered themselves religious, even though only 11 of them (5%) indicated to attend religious meetings one or more times per month. Of the respondents, 50 (21%) indicated to live with their parents or other caretakers, whereas the others indicated to either live alone, or with a partner or friend. The constellation of the groups differed from all men (7%) and all women (7%) to mixed gender (86%).

Procedure

Participants were invited to become involved in a study on the effects of alcohol on group discussions and judgements. This was a cover-up story in order to avoid that participants were aware of the actual aims of the study, i.e. examining group processes in alcohol consumption in an ad-lib drinking setting (Bot, Engels, Meeus & Knibbe, 2005). This type of procedure is employed in many studies on modelling effects on alcohol consumption (see review by Quigley & Collins, 1999). The groups have been invited to our bar lab for two sessions in one year (insert Footnote 1 about here). The first session lasted 2 hours and took place in a bar laboratory at our campus. This bar lab was situated in a room furnished as an ordinary small pub, with a bar and stools, tables and chairs, and indoor games like table soccer, billiards, a pinball machine, a few comfortable couches, and a TV/video. During the sessions popular music was broadcasted. Volume and type of music were kept stable over the groups. Participants were told that we hired this bar from the faculty and it was normally used for private parties and celebrations of staff members of the university.

First, after they had entered the bar lab, the procedure of the study was explained to the participants. Then, they were asked to fill in a questionnaire containing various questions about drinking patterns, expectancies, friendships, and types of relationship within the group. This took about 40 minutes. Next, they evaluated 10 persons by pictures shown on the TV screen. I.e. they each wrote down whether they thought these persons were attractive and intelligent, after which they had 30 seconds for each picture to discuss their opinions with the other group members. These tasks were constructed to be undemanding and participants’ judgements were asked, so it was impossible to give
incorrect answers. Therefore the amount of alcohol consumed would not be lesser as a result of some participants’ urge to do well on these tasks. During the completion of the questionnaire and the evaluation non-alcoholic drinks were offered. After completing these tasks which needed about 10 minutes in total, they had a 50-55 minutes time-out which was to be spent in the bar lab. They could play some of the available games, watch TV, or have conversations. Participants were told that they could order a drink at the bar, and that the bartender would not ask them whether they would like to have something to drink, because this would burden him unnecessarily, and it would be unethical for researchers to push the participants towards drinking. Soft alcoholic beverages (i.e. beer, wine) and non-alcoholic drinks were available and were for free (insert Footnote 2 about here). Nuts and chips were offered for free as well. After the 50-55 minutes free time slot (insert Footnote 3 about here), a second task, similar (but with different pictures) to the first one was executed. This task took the same amount of time as the first one. After 2 hours, the participants went home by taxis. They received 30 euros per group for their participation.

During the 2 hours session, video and audio recordings were conducted. Two cameras were used (one flexible with zoom and one steady), hidden in two corners of the bar lab. A research assistant operated the camera in an observation room next to the bar lab. Participants were told in advance that they would be observed and all gave written permission for the use of these data for our study. When participants asked whether they were also observed during the break, this was affirmed and explained by telling this was in order to assess the total amount people drank, as this was important to assess the expected alcohol effect on the second task. In that case we also stressed that they were not obliged to drink alcohol, because non-drinkers or light drinkers were also required for our study. Pilot studies were conducted to verify the credibility of the setting and procedure. Participants strongly endorsed the credibility of the setting and not one of the 32 participants in the pilot studies guessed the actual aim of the study. Participants were allowed to smoke during the session (if the other group members consented to) because in the pilot studies we noticed that forcing smokers not to smoke while drinking, strongly affects the feasibility of a normal drinking occasion for them.

The research proposal had been approved and granted by the Dutch Foundation for Scientific Research. The medical ethical committee (CCMO Arnhem-Nijmegen) approved of the protocols for our study. Debriefing of participants will be done after the second assessment.

Data from the questionnaires were entered in SPSS 12.0. The video and audio recordings were coded in The Observer 4.1 (Noldus). We did not code the behaviours during both tasks but only coded the free time slot. A coding scheme assessed general activities (e.g., playing billiard, pinball, talking), alcohol specific activities (e.g., asking for drinks, ordering, obtaining drinks), and company (e.g., with whom they interact) during the 52 minutes break (Bot, Engels, Meeus & Knibbe, 2004). All conducted coding had taken the actual time of the session into account. Thus, we were able not only to assess how many (alcoholic) drinks each individual consumed, but also when, in what order, with whom and
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during what activity. Five trained research assistants conducted the coding. For the purpose of the current paper, we only focused on the number of alcoholic and non-alcoholic drinks consumed.

Concerning the analyses of the observational data, we had to omit two groups. One was omitted because of technical problems with video equipment leading to incomplete files and another because the group members decided to do a drinking game during the time-out session. In the latter group, individual drinking behaviour could of course not be predicted by possible explanatory variables such as previous drinking levels or expectancies, but only by chance and possible experience with this drinking game. It should be stressed that in none of the other 28 groups, drinking games have been played.

*Measures*

*Alcohol use (self-reports).* First of all, participants were asked to indicate whether they had ever consumed alcohol, and their age of onset (Engels, Knibbe & Drop, 1997). Further, they were asked to fill in how many drinks they normally drink in 1 hour, when going out (e.g., café, pub, and discotheque). They had to give answers for the number of alcoholic and non-alcoholic drinks. Heavy drinking was assessed by the frequency of 6+ drinking with responses ranging from 1 ‘never’ to 7 ‘more than twice a week’ (Engels, Knibbe & Drop, 1999). We assessed frequency of drinking by asking about how often participants drank in 9 specific settings in the past 4 weeks (Engels, et al., 1999). The following settings were included: parental home, own home, friend’s home, party, youth/student organization, sport canteen, disco, music festival or rave, and café. Responses ranged from 1 ‘never’ to 6 ‘every day’. The overall mean score over these 9 settings was calculated. Due to skewness of the frequency of drinking variables, scores of the total scale were log transformed.

*Alcohol related problems.* A short version of the severity of problem drinking scale of Cornel, Knibbe, Van Zutphen and Drop (1994) was employed to assess the level of problems due to alcohol consumption. Factor analyses with LISREL 8 (Jöreskog & Sörbom, 1993) on a large data set of 6205 adults showed a clear one-factor solution for the total scale. A screening instrument of 6 items matched satisfactory with scores on the total scale consisting of 15 items (R² = .92). Examples of items are “Have you ever tried to quit drinking without being succesful?” and “Did your partner or close relatives ever worry about your alcohol consumption, or complain about it?”. Answers were on a dichotomous scale. Preliminary analyses on a data set of 301 young adults (average age of 22) showed that higher levels of reported problems due to drinking are strongly associated with quantity and frequency of alcohol consumption as well as frequency of heavy drinking (6+ drinking) (Engels, Vermulst, Dubas, Bot & Gerris, 2005).

*Alcohol expectancies.* We measured alcohol expectancies in two dimensions: valence (negative – positive) and arousal (arousal – sedation). According to Wiers et al. (2002), these two dimensions are consistently found in semantic memory studies of expectancies (Goldman et al., 1999), and in emotion research (Lang et al., 1999). Wiers and colleagues developed and employed a measure (2002, personal communication 2004) differentiating four scales. Each scale consists of 6 items. The
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scale was introduced by the following text: “Can you indicate to what amount the following effects occur to you when you drink alcohol or would be drinking alcohol.” The answering categories started with the statement; “Drinking makes me...”. The first scale indicates expected outcomes of drinking that have a positive valence and medium arousal (e.g., fun, happy, nice, friendly; alpha = .88), the second scale negative valence and medium arousal (e.g., depressive, unhappy, sad, alpha = .77), the third scale high arousal and mid valence (e.g., impulsive, intense, energetic, alpha = .85), and the fourth scale high sedation and mid valence (e.g., calm, sleepy, alpha = .69). We executed a factor analysis with varimax rotation and a fixed amount of four factors on the data employed for this study. The fourth factor in the initial solution had an eigenvalue of well over 1 (1.324) and the division of the variables in the factor solution was identical to the four scales in the expectancy questionnaire. The total variance explained by the four factors was 55.78%.

Alcohol use (observational data). We counted the number of drinks consumed in the 52 minutes time-out during the ad-lib drinking session. This study included only the number of alcoholic drinks consumed. If participants did not finish their drinks at the end of the session, we subtracted the rest volume from the total consumption. To assess the amount of alcohol consumed by each participant, their recordings were observed one by one. In pilot sessions the numbers of drinks were counted by several observers, who scored a single measures intraclass correlation of 0.90 (average measures: 0.95). This relatively high level of agreement, together with an analysis of the recordings and a discussion about the differences between the observers’ counts led us to decide to allow single counts as alcohol use measure. Further, we divided the number of glasses consumed beer by 1.5, because the beer glasses we used consisted less alcohol than a glass of wine, and were smaller than a standard glass (insert Footnote 4 about here)

Results

Descriptives

Concerning self-reported alcohol consumption, almost all participants (99%) reported lifetime consumption of alcohol. In table 1 we displayed their scores on the important variables. Robust differences between men and women were apparent. Male participants reported a stronger engagement in 6+ drinking (M = 5.65 vs. M = 4.54, t (238) = 6.61, p < .001), a higher weekly consumption (M = 21.76 vs. M = 10.39, t (238) = 6.11, p < .001), to consume more drinks per hour (M = 4.25 vs. M = 2.53, t (238) = 5.91, p < .001), and scored higher on the problem drinking scale (M = 7.51 vs. M = 6.77, t (238) = 4.77, p < .001) than women. Opposite to the findings of some other studies (e.g. Lundahl et al., 1997) men and women in our sample did not differ on alcohol expectancies, except for the scale sedation and mid valence (e.g., feeling sleepy, and calm) on which men (M = 2.65, SD = .68) scored higher than women (M = 2.35, SD = .70; t (238) = 3.45, p < .001). Often, gender differences in expectancies are confounded with alcohol consumption, and when controlling for these differences, no
effects from alcohol expectancies (e.g. Rauch & Bryant, 2000, for drinking quantity) are found, or effects which are hard to define (Read et al., 2004). In this paper we chose to control for the main effects from gender, and not to examine possible differential effects from gender, to prevent a substantial extension.

Table 1
Characteristics of the Sample.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>20.48</td>
<td>2.10</td>
<td>18</td>
<td>28</td>
</tr>
<tr>
<td>Age of Drinking Onset</td>
<td>13.03</td>
<td>2.27</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Frequency of Drinking</td>
<td>2.03</td>
<td>0.45</td>
<td>1.11</td>
<td>4.22</td>
</tr>
<tr>
<td>6+ Drinking</td>
<td>5.14</td>
<td>1.40</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Alcoholic Drinks/ Hour</td>
<td>3.46</td>
<td>2.38</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Non-alcoholic Drinks/ Hour</td>
<td>1.03</td>
<td>1.08</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Problem Drinking</td>
<td>2.05</td>
<td>2.74</td>
<td>0.05</td>
<td>14.08</td>
</tr>
<tr>
<td>Observed Alcohol Consumption</td>
<td>2.75</td>
<td>1.43</td>
<td>0</td>
<td>7.50</td>
</tr>
<tr>
<td>Positive Expectancies</td>
<td>4.19</td>
<td>0.96</td>
<td>1</td>
<td>6.50</td>
</tr>
<tr>
<td>Negative Expectancies</td>
<td>1.60</td>
<td>0.59</td>
<td>1</td>
<td>4.33</td>
</tr>
<tr>
<td>Arousal Expectancies</td>
<td>3.65</td>
<td>0.93</td>
<td>1</td>
<td>6.33</td>
</tr>
<tr>
<td>Sedation Expectancies</td>
<td>2.51</td>
<td>0.69</td>
<td>1</td>
<td>4.67</td>
</tr>
</tbody>
</table>

*Note.* N = 238.

Age differences were scarce on the drinking measures. Only the problem drinking scores were somewhat higher in older participants ($r (220) = .15, p < .05$). For this reason, age was not included in the analyses.

Not surprisingly, differences in drinking were also found on the peer group level according to self-reported data. Mean levels of drinking per group ranged from, on average, 7.50 (SD = 5.75) drinks per week to 50.13 (SD = 32.41) drinks per week ($F (29,238) = 4.15, p < .01$). These patterns were also apparent in the number of drinks consumed per hour (ranging from 1.88 (SD = 1.03) to 6.81 (SD = 3.48) ($F (29,237) = 2.64, p < .01$). However, no differences between the groups were found in mean level of scores on the 4 outcome expectancy scales. Apparently individual differences within groups were more substantial than differences across groups.

To examine whether a specific subgroup of participants, with different alcohol expectancies, had joined our study, we compared the scores in the current sample with another suitable sample (Students in Social Sciences and their friends; N = 165). No differences were found between this sample and our sample on three of the four expectancy scales. Only on the scale positive valence / medium arousal differences occurred. The sample in the current study scored somewhat higher on this scale than the other sample (M = 4.19 vs. M = 3.98, $t (401) = 2.01, p < .05$). This implies that the sample in our study was somewhat more positive in expectancies from consuming alcohol consumption, but was rather similar on the whole.

*Associations of Alcohol Expectancies and Drinking by Participants’ Self-reports*
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First, the interrelations between alcohol expectancies and self-reported alcohol consumption and problem drinking were examined. Pearson correlations showed clearly that expectancies are differentially related to alcohol use (see Table 2). Positive expectancies and expectancies on high arousal are related to frequency of consumption, and to 6+ drinking, whereas negative expectancies and expectancies on sedative effects of drinking are related to problem drinking. It should be stressed that concerning problem drinking, positive expectancies and expectancies on high arousal were related.

Table 2
Pearson Correlations with, and Multiple Regression Analyses on Alcohol Measures (self-reports) by Outcome Expectancies and Gender.

<table>
<thead>
<tr>
<th></th>
<th>Frequency Drinking</th>
<th>6+ Drinking</th>
<th>Number of Drinks per Hour</th>
<th>Problem Drinking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>ß</td>
<td>r</td>
<td>ß</td>
</tr>
<tr>
<td>Gender</td>
<td>-.29**</td>
<td>-.31**</td>
<td>-.40**</td>
<td>-.40**</td>
</tr>
<tr>
<td>Positive</td>
<td>.18**</td>
<td>.18**</td>
<td>.19**</td>
<td>.15*</td>
</tr>
<tr>
<td>Negative</td>
<td>.11</td>
<td>.09</td>
<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td>Arousal</td>
<td>.14*</td>
<td>.02</td>
<td>.16*</td>
<td>.08</td>
</tr>
<tr>
<td>Sedation</td>
<td>.07</td>
<td>-.06</td>
<td>.01</td>
<td>-.10</td>
</tr>
</tbody>
</table>

Notes. N = 238. r Indicates the univariate correlation between the variables; ß indicates the multivariate regression on the alcohol measures. Explained variances in alcohol consumption by alcohol expectancies ranged between 5 and 8%. Asterisks indicate a significant beta in the total model. * p < .05; ** p < .01.

In survey studies that examine the relation between expectancies and alcohol consumption, usually regression analyses are applied. To compare the findings in our observation study with those in other studies, we first analysed the survey data of our sample by multiple regression analyses. Gender was included in the first step, and the 4 alcohol expectancy scales in the second step. As depicted in Table 2, it appeared that participants, who had positive expectancies effects, were likelier to drink frequently in the past 4 weeks. The set of expectancies explained an additional 6% of the variance in drinking after controlling for age and gender (11% explained variance in drinking). Concerning the frequency of 6+ drinking (R² change = .05) and the number of alcoholic drinks per hour when going out on an evening (R² change = .07), participants who endorsed positive expectancies were likelier to consume a large number of drinks per hour. In the analysis of problem drinking, both positive and negative expectancy scales were multi-variately related to individual differences in problems attributed to alcohol consumption (R² change = .08).

Alcohol Use in Observational Setting: Descriptives and Links with Self-report Data

Of all participants, only 4.3% did not consume any alcoholic beverages in the bar lab setting. The observed alcohol consumption is shown in Table 1. Strong gender differences were found: Men consumed more alcohol in terms of number of glasses (M = 3.31) than women (M = 2.02; t (221) =
In terms of total consumption, adding up alcoholic and non-alcoholic consumptions, men appeared to consume more than women (M = 5.13 vs. M = 3.60; t (227) = 4.71, p < .001).

Further, we examined whether levels of alcohol consumption in the observation study were related to self-reported data on alcohol consumption. This appeared to be the case. Drinking levels in the observation study were related to weekly consumption (r (221) = .34, p < .001), frequency of 6+ drinking (r (213) = .31, p < .001), and problem drinking (r (220) = .42, p < .001). It was also related to self-reported consumption per hour when being in a pub or bar (r (220) = .42, p < .001). This illustrates that those participants who drink heavily and frequently according to their self-reports also tend to drink substantially in the observation study. A paired t-test demonstrated that participants reported a higher drinking rate in one hour (M = 3.34, SD = 2.03) compared to the levels of drinking in the observation data (M = 2.76, SD = 1.42; t (220) = 4.46, p < .001).

**Associations between Alcohol Expectancies and Drinking: Observation Data**

The zero-order correlations showed that two scales assessing outcome expectancies were related to drinking levels according to the observational data (positive expectancies / mid arousal: r (221) = .28, p < .001; high arousal / mid valence: r (221) = .26, p < .001). Partial correlations showed that these associations remain significant (r = .30 (positive), and r = .29 (arousal)) after controlling for effects of gender on drinking levels. As the scales negative expectancies / mid arousal and high sedation / mid valence were unrelated to observed drinking levels (p > .10), we decided to conduct advance analyses using only positive expectancies and expectancies on arousal as predictors.

As mentioned above, participants’ drinking levels are strongly affected by the specific peer group they are in. These kinds of data are often referred to as nested data, because characteristics or objects within one level are nested within characteristics or objects of another level (Van der Valk, 2004). In this case, there is intra-group dependency in alcohol consumption, reflected in the intra-class correlation. The intra-class correlations show that concerning drinking levels, a proportion of the variance can be ascribed to differences between groups (r = .46, p < .001). However, concerning the expectancies, no significant intra-class correlations (p > .05) were found indicating that no variance in expectancies can be ascribed to higher levels, namely groups. Separate multilevel analyses (MLwiN 1.1) were conducted to examine the relation between from positive expectancies / expectancies of arousal and drinking levels. While it was apparent that drinking within the groups was dependent on the proportion of males in the group, we not only entered respondent’s gender, but also the gender composition of the groups in the analyses. As a result, multilevel analyses were conducted with gender (i.e., gender and gender distribution in the groups), and expectancies as independent variables, and drinking levels as dependent variable. First we estimated the deviance (IGLS, see Goldstein, 1995) of the intercept-only model; then we computed the models containing the variables we aimed to test. The least significant predictors in the model were omitted stepwise until the deletion of variables led to a significant increase in the deviance of our model. Last, we tested whether this solution was significantly better than the intercept-only model. We tested both fixed and random effects. The fixed
effects are the regression weights of the independent variables, and the random effects indicate the variance in the regression weights between groups. If a random effect is found, this means that a relation varying between groups exists between an independent variable and a dependent variable.

Our analyses clearly demonstrated that both positive expectancies and expectancies on arousal significantly are related to individual drinking levels, above group and gender associations. No random outcomes were found between alcohol expectancies and drinking behaviour. For gender and gender distribution in the group we did find random outcomes (see Table 3).

Table 3
Multilevel Analyses on Alcohol Consumption in the Bar Setting by Alcohol Expectancies, Gender and Gender Distribution in the Group.

<table>
<thead>
<tr>
<th>Expectancies</th>
<th>Empty Values (SE)</th>
<th>Positive Values (SE)</th>
<th>Arousal Values (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.75 (0.10)**</td>
<td>0.49 (0.35)</td>
<td>0.61 (0.31)*</td>
</tr>
<tr>
<td>Gender</td>
<td>0.75 (0.19)**</td>
<td>0.75 (0.20)**</td>
<td></td>
</tr>
<tr>
<td>Gender Distribution</td>
<td>1.21 (0.42)*</td>
<td>1.17 (0.42)*</td>
<td></td>
</tr>
<tr>
<td>Expectancy</td>
<td>0.27 (0.07)**</td>
<td>0.28 (0.07)**</td>
<td></td>
</tr>
</tbody>
</table>

Random Effects

Level 2
| Gender       | 0.36 (0.22)*    | 0.37 (0.22)*        |                     |
| Gender Distribution | 0.91 (0.43)* | 0.92 (0.43)*        |                     |

Level 1
| Intercept    | 2.04 (0.19)**   | 0.82 (0.09)**       | 0.81 (0.09)**       |

Deviance
| 784.22       | 635.31          | 633.71               |

$\chi^2$(5) (as compared to empty model) | 148.91*** | 150.51***

Notes. N = 221. * p < .05; ** p < .01. Insignificant values are omitted from the analyses in consecutive steps.

In sum, our findings clearly indicate that in this sample of social drinkers, positive expectancies and expectancies on the effects of alcohol on arousal are related to drinking levels in an ad-lib drinking setting. As expected, negative expectancies and expectancies on the sedating effects of alcohol were not related to drinking levels in social drinking settings. Those participants with positive expectancies on the effects of drinking and those who expected that alcohol would arouse them were likelier to drink with their peers.

Discussion

The present study aimed to test the effects of alcohol expectancies on alcohol consumption in groups of young adults in a naturalistic drinking setting. In general, our findings showed that positive expectancies (e.g., drinking makes me happy, enjoyable) and expectancies on the effects of alcohol on arousal (e.g., drinking makes me impulsive, energetic) were related to drinking levels in an ad-lib
drinking context. In contrast, negative expectancies and expectations on the sedative effects of alcohol were not related to drinking.

The most important aspect of this study is that it tests the relation between expectancies on alcohol consumption in a naturalistic drinking setting, whereas until now, mainly survey studies and experimental studies have been done. In most cross-sectional or longitudinal research only on the aggregate level associations between certain expectancies and drinking in general can be examined (see reviews by Jones et al., 2001; Leigh, 1989). However, in these empirical studies, the question remains whether and which expectancies predict drinking behaviour in specific settings, such as drinking with peers in public places. According to Lee et al. (1999), the links between expectancies and drinking levels in a drinking session deserve attention because they provide insight into the mechanisms by which drinkers either limit their consumption at a certain moment or decide to continue drinking. In terms of negative health and social consequences of young people’s drinking habits, information on binge drinking is highly relevant. Our findings underline the relevance of explicit expectations in drinking behaviour in specific social settings. The fact that negative expectations are not related to drinking levels is quite understandable bearing in mind that drinking in this social setting, namely being with friends or acquaintances in a pub, is probably not driven by expected negative emotional outcomes. In our sample of college and university students it has been shown that, on a mean level, not many negative effects of drinking alcohol are being expected, and that they are not related to alcohol consumption. This non-significant association might be caused by a selection effect. In particular people who think that alcohol use leads to strong negative emotions, such as stress and loneliness, might not have been part of the sample. People who drink to alleviate feelings of stress, might not want to be involved in a study on alcohol use, or worse, might not be part of a relatively large peer group of 7 to 9 persons. This is supported by findings of a study of Engels et al. (1999), showing that especially for young people who drink in non-social settings, levels of stress are related to quantity of alcohol consumption. The contextual characteristics of a bar may also account for the non-significant links between expectancies on the sedative features of alcohol. This is not a situation in which specific expectancies on sedative effects of alcohol steer high levels of drinking. Of course it is possible that expectancies on sedation may be better predictors of alcohol consumption in extended drinking sessions, as the effects of alcohol on sedation may be more apparent after more time and higher alcohol intake. If this is the case, expectancies on sedation could be a protective factor in total quantity of alcohol consumption in one occasion, but our study does not reveal this.

Furthermore, these findings seem to support the reliability and credibility of examining alcohol use in groups in a bar laboratory setting. Although we aimed to create an atmosphere in which people would react as natural as possible, which means as natural as they were when they would be in a real pub, the question remains whether we actually succeeded. There are some indications that we did. Firstly, the cover up story worked quite well according to the pilot studies. In addition, but this is primarily based on personal impressions, the behavioural patterns exhibited in the one hour time-out
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session, are quite exemplary for normal behaviour in a pub or bar; for instance, people laugh, play games, sometimes have conversations about rather intimate matters, make passes to each other, or watch TV. Secondly, there is also statistical evidence for the credibility of the setting. It might be possible not to find systematic overlap between what people normally drink and what people drink in this specific setting. If those who would normally drink substantially when being out, hardly drink in the bar lab setting, or vice versa, this would seriously conflict with the credibility of the setting. However, this was not the case. Young people who reported to drink excessively and frequently in everyday life were likelier to consume a high number of drinks in this one hour time-out session in the bar lab. It could even be that the drinking in the one-hour time-out session was a better indication of alcohol consumption in everyday life. Distortions of survey reports of drinking might be caused by e.g. individual difficulties to recall the number of drinks one had, but the amount of alcohol an individual drinks might also be affected by aspects like glass sizes, shapes, fill levels, and ethanol strength (Kerr & Greenfield, 2003). In such cases the number of drinks reported might not be very informative, while in our study such variations are controlled for. Even so, the self-report data on the associations between expectancies and drinking levels (during one hour when being in a public drinking place) strongly coincided with the associations found when assessing drinking levels with observational data.

Studying drinking in social groups implies that drinking levels are not only affected by individual differences in outcome expectancies, but presumably primarily by social interactions. The variations in mean level of drinking between the peer groups, and non-significant differences in alcohol expectancies between groups illustrate that social interactions play a substantial role in the development of drinking levels. A strong point in our study is that no group effects from expectancies on drinking levels were found. This implies that, no matter what the drinking level in the group is, drinking may be predicted by the individual expectancies of the group members. On the other hand, it could also be that the association between drinking expectancies and alcohol consumption is not independent from social influences on drinking. In that case, social aspects may moderate the relation between expectancies and alcohol consumption and can be considered relevant for the relation between expectancies and drinking, instead of merely an interfering factor (see e.g. Barnow et al., 2004). It may be interesting to look at observational data in this manner in the future; moreover, further research employing observations of individual drinking may provide insight in this topic also. In this study, however, we considered alcohol expectancies mainly as an individual measure, rather than a social orientation. The correspondence in drinking patterns between peer group members might nevertheless be affected by peer influence and selection processes (e.g., Bauman & Ennett, 1996; Bot, Engels, Meeus & Knibbe, 2004; Engels et al., 1999; Kandel, 1978). In additional analyses, we found strong similarities in drinking behaviour within peer groups. Of course selection effects could explain this: people who drink are likelier to affiliate with drinking peers. However, intra group processes might also affect the variation in individual drinking levels in a specific drinking context. For
example, people might imitate the alcohol consumption of persons with a high social status likelier than the alcohol consumption of persons with a low social status. In addition, those who instigate drinking by ordering drinks, or pressuring others to drink, might be more strongly affecting individual drinking levels than those who are more passive in their peer group interactions. Still, despite these apparently strong influence processes within the peer group, characterized by similarities in drinking, it appeared that certain types of expectancies still affect variance in drinking levels.

Our study suffers from a few limitations. First, even though alcohol expectancies and drinking behaviour were assessed using different measures, which may prevent shared-rater-bias, in our study no longitudinal data were employed. The causal direction of the relation between alcohol expectancies and drinking behaviour cannot be fully determined and may be the other way round. Secondly, although drinking levels in this observational setting are corresponding to what people normally drink, our setting is of course not representative of a normal evening out with friends: they generally spend more time with each other when being out, and therefore alcohol consumption might be spread more over the evening. The alcohol expectancies on e.g. arousal might be more predictive in these extended drinking sessions. Thirdly, asking after specific expectancies concerning drinking in social contexts might have led to different associations between expectancies and alcohol consumption than the expectancy questionnaire we applied, which asks for general expectations from alcohol consumption. On the other hand, applying a general expectancy measure allows comparison with other studies in which general measures are also used. We also disregarded social interactions with other persons in a bar. We decided not to invite other groups in this study because this would make the situation too complex to study. The central aim of the project is to examine processes in drinking in existing social groups. Nonetheless, it would be interesting to know to what extent alcohol expectancies predict drinking in social settings with mainly people who are not acquainted with each other. In a similar vein, it might be interesting to explore to what extent (specific) expectancies predict drinking in a context in which potential (romantic or sexual) partners are present. Fourthly, we only concentrated on first and second year university students, which hampers the generalizability of our findings. Finally, we might have attracted those students with initially high consumption patterns. Although the average frequency and quantity of drinking is rather high compared to the normal population or to other non-student peers, it does not deviate from the typical college and university student in the Netherlands, who drinks 16 alcohol consumptions in one week (see Maalsté, 2001), as compared to 16.7 alcoholic consumptions in one week in our research group. There are hardly other age categories or subgroups in the Netherlands that show higher drinking levels than college and university students (e.g., Poelen, Scholte, Engels, Boomsma & Willemsen, 2004).

All in all, our study shows that positive expectancies and expectancies on the high arousal propensities of alcohol use are related to enhanced levels of drinking in peer groups in a bar context. Moreover, it adds to findings of self-report studies showing the relevance of specific expectancies on binge drinking. In future analyses, we will look at the interplay between social interaction processes
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within the peer groups and individual characteristics, such as outcome expectancies, on young adults' alcohol consumption.
1. By doing this, it is possible to study longitudinal and selection effects. In this paper we only looked at the results of the first measurement. The participants were informed beforehand that they were expected to come to our bar lab more than once. We told the participants that we did not fully explain the aims of our (cover-up) story. Therefore, aspects of the study that may have seemed odd to the participants were often attributed to the aim of our (cover-up) story. None of the participants was confused about the fact that they were expected to come back after some time.

2. It is essential to mention that soft alcoholic drinks in the Netherlands are relatively cheap (for example, in ordinary bars or restaurants, the price of a beer (.25 centilitre does not exceed 2.00 Euros). This implies that offering drinks for free does not encourage excess drinking for the majority of Dutch youths. Of course, if this study would have been conducted in cultures with a different drinking culture, offering drinks for free would probably lead to binge drinking in almost all of the participants. Nonetheless, still many students consumed a substantial number of drinks in this time-out session.

3. Group sessions differed in duration of the time-out session (between 52 and 58 minutes). Because the duration of this part of the study is of course related to the opportunity to drink alcohol, we decided to score a period of 52 minutes for all groups.

4. In our study we used glasses that were smaller than standard glasses. In all sessions the same glasses were used and filled to the same level. The contents of beer glasses were on average 160 ml and the contents of wine glasses 110 ml. The (lager) beer we used in our study contained 5% alcohol, which means that a glass of beer contained on average 8 ml pure alcohol. The wines we offered contained from 11 to 12% alcohol, so a glass of wine contained from 12.1 to 13.2 ml pure alcohol.
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References


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smells like teen spirit*: sex differences in susceptibility to peer influences concerning alcohol consumption

* ‘Smells like teen spirit’ is the title of a song of Nirvana.

Submitted for publication as:
CHAPTER 8 - sex differences in susceptibility to peer influences

Abstract

This study aims to examine sex differences in susceptibility to peer influences on young people’s alcohol use using survey and observational methods. Using longitudinal surveys, we found hardly any effect of peer drinking on adolescent use, and no robust sex differences in susceptibility to peer pressure. Further, we conducted a study in which we observed ad-lib drinking in existing peer groups. Multilevel analyses show sex differences in susceptibility to peer drinking: men are strongly affected by the average drinking levels in their group, but women are not. Our findings suggest that this robust sex difference can partly be explained by differences between men and women in (a) context-dependency of drinking and (b) motivation to stop drinking due to sexual or romantic intentions of peers within the group. Our observations of drinking behavior show the importance of developing models on the causes of sex differences in susceptibility to peer influences on individual drinking patterns.
CHAPTER 8 – sex differences in susceptibility to peer influences

Introduction

“Overall, our data do not support the notion of pervasive peer influence on the part of one’s friend with respect to adolescent health behaviors” (Jaccard, Blanton, & Dodge, 2005, p. 144). This quote stems from a recent paper published in a prominent APA journal, Developmental Psychology, in which the authors report longitudinal data on the effects of best friend’s alcohol use and sexual behavior on changes in individual behaviors in a sample of 13 to 17-year-olds. They claim that modeling effects of peer risk behaviors are less relevant in shaping adolescent behaviors than is often assumed.

These findings are in sharp contrast with the prevailing prominent view that peers do matter. In a review on theories explaining adolescent involvement in substance use, Petraitis, Flay and Miller (1995) state that peer influences are the most consistent and strongest factor in the initiation and maintenance of smoking, drinking and drug use in youth. This conclusion is based on findings of several studies that have shown high similarities in drinking between friends, which is often interpreted as the result of young people’s tendency to adjust to peer norms. Often, when people are in the company of drinking friends, the direct impact of imitation as well as the more indirect impact through the role of prevailing group norms on alcohol use might lead to young people adjusting their behavior to these group norms. Fine-grained longitudinal analyses have however shown that alcohol consumption of either best friends, peer group members, or other peers is no strong predictor of initiation and maintenance of juvenile drinking (e.g., Andrews, Tildesley, Hops & Li, 2002; Bauman & Ennett, 1996; Bot, Engels, Knibbe & Meeus, 2005a; Engels, Knibbe, De Vries, Drop, & Van Breukelen, 1999; Fisher & Bauman, 1988; Gaughan, 1999; Poelen, Engels, Van der Vorst, Scholte & Vermulst, 2006; Urberg, Değirmencioğlu & Pilgrim, 1997). In addition, one may suggest that some adolescents may be more susceptible to modeling peer behaviors than others, and that individual characteristics, such as personality, relationship characteristics, quality of relationship or social status strongly moderate the effects of peer influences. Nonetheless, research revealed little support for moderating effects (e.g., Bot et al., 2005a; Jaccard et al., 2005; Poelen et al., 2006; Urberg, Luo, Pilgrim, & Değirmencioğlu, 2003; Vitaro, Brendgen & Tremblay 2000).

Methodology

Does this imply that we should reject the hypothesis that peer’s alcohol consumption affects individual drinking? We do not think so. It might be that we have been using inadequate designs to study peer influence. The vast majority of prospective studies are using surveys in which adolescents, and sometimes their peers, are regularly (mostly on an annual basis) interviewed about their own and peer behaviors. Therefore, we aim to predict changes in individual drinking over time by peer drinking. However, theories on modeling of peer behaviors are tested without examining direct interactions between peers. This is most probably one of the problems in this line of research.
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Few studies have employed other designs to test hypotheses regarding peer influence on alcohol use. To begin with, in the 70s and 80s a relatively small research tradition consisted of experimental studies on alcohol use and modeling (see review by Quigley & Collins, 1999). The findings of these studies generally show that when people are in the company of a drinker, the drinking pace of the other (a confederate) affects individual drinking rates and consumption levels. However, these types of studies examined processes of imitation in pairs of strangers, while adolescents and young adults mostly drink with friends or other peers (Knibbe, Oostveen & Van De Goor, 1991). In our opinion, this strongly limits the generalizability of these experimental studies.

In addition, some scholars have been systematically observing communication in friendships. In a series of studies, Dishion and colleagues demonstrated that content and structure of communication between close friends are related to development of deviant behaviors, including drinking (Dishion, Bullock & Granic, 2002). In a project among 206 boys, who were followed from late childhood to young adulthood, videotaped interaction tasks between these boys and their closest friend were coded on content and structure of communication. Granic and Dishion (2003) showed that friends can be drawn into deviant talks, and that this type of deviant communication is related to problematic development later on. In another prospective study, Dishion and Owen (2002) revealed that deviancy talk in friendships - especially issues relating to substance use - in the teenage years was associated with alcohol abuse in young adulthood. Nonetheless, an important limitation of these studies is that although they focused upon observing deviancy communication in friendships, they did not observe peer influences on alcohol misuse or other problem behaviors in their natural context. Surprisingly, there is no research in which modeling processes and alcohol use in existing peer groups are observed in a natural context, namely a bar, disco or party.

In sum, survey research, with excellent designs and short intervals between the waves, provided only limited evidence for strong modeling effects on adolescent drinking. We argue that survey designs are less suitable to gain insight into the conditions under which people actually imitate someone else’s drinking. In the current study, we aim to test whether peer group drinking affects men and women similarly, and if there are sex differences, how these can be explained. We used both longitudinal survey as well as observational studies to test sex differences in susceptibility to peer drinking.

Sex Differences

Descriptive studies have shown that men and women differ in drinking patterns in Western societies. The recent ESPAD study clearly demonstrate that in almost all European countries boys drink more frequently and consume more glasses per occasion compared to girls (Hibell et al., 2004). Of course differences in prevalence of alcohol use and misuse do not allow conclusions concerning differences in predictors of drinking. It might be that, although sex differences in alcohol patterns obviously exist, the type of predictors as well as the magnitude of the predictor variables in explaining individual alcohol use is similar for men and women. In this paper, we hypothesize that there are sex
differences in susceptibility to peer influences on heavy drinking. We argue that men are more strongly affected by what their peers drink than women. Further, if this holds, we will test a few explanations why this sex difference exists.

To start with, in peer groups and friendships, alcohol appears to be of more importance for social identity and belongingness for men. This is exemplified by research showing that, in particular among men, alcohol use is related to social functioning and relational competence. In a prospective study, Pape and Hammer (1996) found that primarily in men, late starters were more likely to have mental problems, and experienced deprived social functioning compared to adolescents who started drinking at a normative age. Engels, Knibbe, and Drop (1999) found that late adolescents who exclusively drink at home and not in public drinking places are less socially integrated in a peer group and have fewer friends compared to late adolescents who exclusively drink in public drinking places or in both settings. However, they found this effect only for men (see also Engels & Knibbe, 2000). In addition, Suls and Green (2003) showed that men indicated more social pressure to drink while women perceive less social pressure and are more concerned about consequences of drinking, such as unprotected sex and pregnancy. They concluded that women are better able to resist the public norm on drinking as heavy alcohol use does not hold as positive a connotation for women. In line with Prentice and Miller (1993) men may feel pressure to learn to be comfortable with alcohol, especially when being with same-sex peers. So, in a drinking context such as a bar, disco or party, men will more likely trying to conform to prevailing group norms on drinking. This suggests that for men the amount they drink depends more strongly on the specific situation they are in: Drinking is more context-dependent for men than for women. Apparently, alcohol use forms a strong feature of male bonding in groups and the disadvantages of abstinence in terms of social exclusion might be more prominent for men, leading to men being more likely to adapt to the prevailing norms of the group in a specific situation (Footnote 1 about here).

Next, if we argue that drinking for men is more strongly affected by peer influence processes, it may be that women’s drinking is more affected by their personal anticipations related to the consequences of consuming alcohol. Research on alcohol expectancies has become central in theoretical models explaining adolescent and adult engagements in alcohol use, alcohol misuse and alcohol-related problems (e.g., Jones et al., 2001). Whether people start and continue drinking depends on the interpretation of the effects of alcohol on their own functioning. If people believe that drinking provides them with energy, makes them more sociable, gives them power, or arouses them sexually, they are more likely to start drinking in social settings (e.g., Oei et al., 2003; Wall, Thrussell, & Lalonde, 2003). Expectancies on, for instance, the social and enhancing features of drinking indeed predict whether people actually consume alcohol in a disco, restaurant and bar (diary data; Engels, Wiers, Lemmens & Overbeek, 2005) or bar lab (observational data; Bot et al., 2005b). Women might be more strongly led by what alcohol does to them than men. Our explanation is that in a social drinking context with opposite-sex peers, women seem to be more careful what they do and how much
they drink. The norms on drinking are still different for men and women, simply stated, young male’s heavy drinking is associated with positive features such as macho, social, extravert and masculine, while young female’s heavy drinking is associated with often both positive and negative features, such as social, loss of control, easy to get, and open for sexual experiences. These images of drinking are not only colored by young people’s own experiences, but also by the media (movies, soap series, news) (see Spijkerman et al., 2006). To prevent giving the wrong impression and to keep control over the situation, women might be more strongly led by what they think alcohol is doing to them. Thus, in a mixed-sex peer context, if they think drinking makes them more sociable but not sexually aroused, they might be more tempted to drink. But if they think alcohol makes them unsociable, and more prone to sexual experiences, they might decide against drinking.

Finally, we assume that drinking behavior is not only affected by what women think about alcohol, but that they also take into account what they suppose alcohol does to others, and more specifically to the company they are with. As said, one of the reasons why women may not be strongly affected by other group members’ drinking habits (i.e. model drinking of peers) is to keep control over the situation, e.g. do not want to fit to the drinking standards of the group as they may go over the top. This attitude might be shaped by women’s assumptions that being with men who drink a lot might have negative consequences, like getting a bad reputation or being confronted with sexual harassment. This may in particular occur when women assume that some (male) group members think that alcohol makes them more powerful or more attractive for the opposite sex (Seto & Barbaree, 1995). Men also think more than women that alcohol is related to more sexually oriented behavior (Abbey, Zawacki, & McAuslan, 2000). Thus, for women, it might be risky to drink too much – and to conform to the group norms – when they think that the other (male) group members strongly associate drinking with sexual arousal or feelings of power. In contrast, when they think that the other group members primarily associate drinking with pro-social behavior (e.g., having fun) and enhancement effects (e.g., being relaxed) then this may not affect women’s drinking levels.

The Present Study

We start by analyzing survey data from two large-scale longitudinal research projects. The first is a 1-year follow-up study among a sample of 832 subjects of 12 to 16-year-olds, in which the adolescents were interviewed at home and filled out items about their own and best friend’s drinking. In the second project - a 3-wave 1-year longitudinal survey among 1595 adolescents - we administered questionnaires at school and used self-report data of adolescents and their mutual best friend. The latter approach, in which one uses not only the friend’s self-report but also reports by the best friends themselves about the mutuality of the relationship, has some advantages over the use of adolescent reports on their best friends’ behavioral patterns (e.g., Bauman & Ennett, 1996). On the basis of earlier longitudinal findings we hypothesized that we find only small effects of peer drinking on individual drinking, and no sex differences in susceptibility to peer modeling on drinking.
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In the third study we used observational data of young adults’ (n = 238) drinking in existing peer groups. Young people’s drinking and social interactions were observed while they visited a bar lab. We assume that with this observational design in which we observe drinking in its natural context, it is more likely to find sex differences in susceptibility to peer influences. We expect that men’s drinking is more strongly affected by the average drinking of the peer group, and women’s drinking, in contrast to men’s, is more strongly affected by their outcome expectations. In addition, we expect that when women are in a group with peers scoring high on sexual arousal and power expectancies they will drink less than when they are in a group of peers scoring low on these particular expectancies. For men, however, we expect that when in a mixed sex group scoring generally high on power or sexual arousal expectancies, they will drink more. As social and enhancement expectancies are not expected to be harmful or leading to unsafe situations, we expect no sex differences in the effects of these expectancies held by group members on people’s own drinking.

Study 1:
A Full-Family Study with Two Adolescent Children

Method

Participants and procedure
A total of 428 families with sibling-pairs participated in a longitudinal study called “Family and Health”, in which different socialization processes underlying several health behaviors in adolescence are assessed. A sample of Dutch families with at least two siblings between the age of 13 and 16 years were invited to take part in the project (for details of the sample selection see Harakeh, Scholte, De Vries & Engels, 2005; Van der Vorst, Engels, Meeus, Deković & Van Leeuwe, 2005). The addresses of these families were derived from registers of 22 municipalities in the Netherlands. 885 families agreed to participate and returned the included response form. These families were selected by the following criteria: the adolescents and their parents had to be biologically related and the parents had to be married or living together. Also, families with twins or offspring with mental or physical disabilities were excluded from the study. Furthermore, an equal division of education and an equal amount of sibling dyads, i.e. boy-boy, boy-girl, girl-girl, girl-boy were selected. In the end, a total of 428 Dutch families participated in this longitudinal study at the first wave and 416 at the second wave; the data with an interval of one year were used in the current study.

Trained interviewers visited the families at home. All four family members filled in a comprehensive questionnaire individually. Completing the questionnaire took approximately two hours. The participants were not allowed to discuss the questions or answers with each other. Each family earned a check of 30 euros after all the four family members completed the entire
questionnaire. At the end of the study five travel cheques of 1000 euros will be raffled between families who took part at all three waves.

The majority of the participating adolescents were of Dutch origin (> 95%). The mean age of the older siblings was 15.22 (SD = .60) at the first wave and varied between 14 and 17 years. The mean age of the younger siblings at the first wave was 13.36 (SD = .50) and varied between 13 and 15 years. Sex of both siblings was almost equally divided: 52.8% older boys and 47.7% younger boys at the first wave. The study consisted of 108 boy-boy dyads, 118 boy-girl dyads, 96 girl-boy dyads, and 106 girl-girl dyads. At the first wave approximately one-third of both siblings followed special or low education, one-third followed an intermediate general education, and the other adolescents followed the highest level of secondary school in the Netherlands, namely, preparatory college and university education.

Measures

Alcohol consumption. Both siblings in each family were asked how often they consumed alcohol in the past four weeks. They had to respond on a 6-point scale ranging from (1) ‘have not been drinking’ to (6) ‘every day’ (Engels & Knibbe, 2000). The intensity of drinking was measured by asking the number of alcoholic beverages the siblings had drunk in the previous week during weekdays and in weekends in home contexts and outside the home (Engels et al., 1999). By asking these four specific situations, respondents are forced to actively recall episodes in their memory, which is supposed to increase reliability of response (Bot et al., 2005a). The scores on these four questions were summed to get an indication of the total number of glasses of alcohol each sibling consumed in the past week.

Best Friend’s Alcohol Use. Adolescents were asked to write down the name of their first best friend. After that, they were asked to fill in similar items for their friends on frequency and intensity of alcohol use as for themselves. The 4 items on intensity of use were summed. Several studies suggested that young people who drink tend to overestimate their friends’ alcohol use (Bauman & Ennett, 1996). To establish whether the adolescents were accurate in their reports on their friends’ drinking habits, we gathered data from the adolescent friends in a sub-sample. We found relative high agreement between adolescent reports on their best friend’s drinking and own reports (see Poelen et al., 2006).

Results

Descriptive Analyses

The older siblings consumed almost 4.4 drinks a week (SD = 6.8) at T1. One year later, the alcohol use of the older siblings had increased to an average of 7.2 glasses a week (SD = 10.6). The younger siblings drank on average 1.2 glasses a week (SD = 3.4) at T1. At the second wave the alcohol use of the younger adolescents had raised to 3.1 drinks a week (SD = 8.4). The increase in alcohol consumption of both siblings appeared to be significant ($t_{\text{oldest}} (407) = 6.50, p < .001$ and $t$
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Furthermore, the siblings differed significantly in their drinking at both time points $t_{wave\ 1}$ (417) = 9.30, $p < .001$ and $t_{wave\ 2}$ (412) = 8.24, $p < .001$.

In addition, the older siblings drank on average more often than the younger ones at the first wave (M = 2.15, SD = .95; M = 1.56, SD = .75 respectively for older and youngest sibling; $t_{wave\ 1}$ (424) = 11.85, $p < .001$), but also one year later (M = 2.33, SD = .90; M = 1.81, SD = .82 respectively for older and youngest sibling; $t_{wave\ 2}$ (422) = 10.36, $p < .001$). The increase in frequency of alcohol consumption of both siblings appeared to be significant ($t_{oldest}$ (422) = 3.79, $p < .001$ and $t_{youngest}$ (424) = 6.70, $p < .001$).

With respect to the similarities between best friend and respondents’ alcohol use, in terms of quantity of drinking, Pearson correlations were high for the oldest child ($r_{(428)} = .71, p < .001$), and moderate for the youngest ($r_{(428)} = .45, p < .001$). For frequency of drinking, similar correlations were observed for the oldest child ($r_{(428)} = .58, p < .001$), and the youngest child ($r_{(428)} = .49, p < .001$). In sum, it seems that best friends and adolescents are quite similar in their drinking, at least according to the adolescents themselves. However, our main question is whether best friends’ drinking levels predict longitudinally adolescents’ drinking behaviors. The next set of analyses addresses this issue.

### Table 1
Hierarchical Regressions predicting Frequency and Intensity of Drinking at T2: Longitudinal Analyses

<table>
<thead>
<tr>
<th></th>
<th>Oldest Adolescent</th>
<th>Youngest Adolescent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Intensity</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking Respondent T1</td>
<td>.32***</td>
<td>.48***</td>
</tr>
<tr>
<td>Drinking Friend T1</td>
<td>.10</td>
<td>.06</td>
</tr>
<tr>
<td>Sex</td>
<td>-.11**</td>
<td>-.14***</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking Respondent T1</td>
<td>.33***</td>
<td>.48***</td>
</tr>
<tr>
<td>Drinking Friend T1</td>
<td>.15</td>
<td>.03</td>
</tr>
<tr>
<td>Sex</td>
<td>-.11</td>
<td>-.14***</td>
</tr>
<tr>
<td>Sex * Drinking Friend</td>
<td>-.05</td>
<td>.03</td>
</tr>
</tbody>
</table>

*Note.* Included are standardized parameters ($\hat{b}$). N = 832.

### Regression Analyses

**Oldest Adolescent.** Longitudinal hierarchical regression analyses showed that intensity of drinking at T1 was strongly associated with drinking at T2 (Table 1). By entering prior drinking in the first step of the regression equation all following steps can be assumed to indicate changes in drinking between T1 and T2 (see Allen et al., 2002). Furthermore, best friend’s drinking at T1 did not predict participant’s drinking at T2, and the respondent’s sex predicted changes in drinking with boys drinking more at T2 than girls. No two-way interaction was found between intensity of friend’s
drinking and sex. Correspondingly, a similar pattern of findings was displayed for the prediction of frequency of drinking at T2, with the participant’s frequency of drinking at T1 and sex as sole predictors at T2.

Youngest Adolescent. The same series of hierarchical regression analyses were conducted with reports of the youngest child. Again, intensity of drinking at T1 was the strongest predictor of individual drinking at T2. Best friend’s drinking at T1 predicted participant’s drinking at T2. No effects of sex on drinking levels were found. No two-way interaction was found between intensity of friend’s drinking and sex. Also, a similar pattern of findings was observed for the prediction of frequency of drinking at T2, with participant’s frequency of drinking at T1 and best friend’s drinking as significant predictors of individual’s use at T2.

Summarizing, no (oldest adolescent) to small (younger adolescent) longitudinal associations were found between best friend’s drinking, and participant’s frequency and quantity of drinking. In addition, we found no evidence for differential effects for boys and girls. One of the main limitations of this first study was our reliance on one informant to provide us with information on the adolescent’s own and his or her best friends’ drinking behavior. The second study aimed to address this gap by using self-reports of adolescents and their reciprocal best friend.

Study 2:
A Longitudinal School Survey among Early Adolescents

Method

Respondents and procedure

The data for this study were collected from a large-scale, 3-wave longitudinal study of predictors of substance use among early adolescents (e.g., Bot et al., 2005a; Van der Vorst, Engels, Meeus, Dekovic & Vermulst, 2006). Ten Dutch schools of middle education participated in this study and all the students in the first and second grade at these schools took part. In the Netherlands, youngsters start their educational career at the age of 4. Then, they are enrolled in primary education for about 8 years, and at approximately the age of 12 they will continue their education at a secondary school. The parents of the respondents were informed of the purposes of this study and had the opportunity to withdraw their child from the study.

The first measurement was conducted in the autumn of 2000, T2 was conducted in the spring of 2001 (6 months after T1), and the third wave in the autumn of 2001 (approximately 12 months after T1). Testing procedures were identical for all three waves. Questionnaires were administered among students during regular school hours in the presence of their teacher. The forms took about 45 minutes to complete. We started the project with a sample of 1969 adolescents and 1595 (81%) of the original students participated in all three measurement waves.
All respondents were informed that all information would be kept strictly confidential and used for research purposes only. To increase the students’ motivation to participate, all students were entered into a lottery (the prizes were Compact Disk gift certificates) and winners were announced after the measurements were administered.

A total of 794 boys (49.6%) and 801 girls provided data. The age of the adolescents varied from 10 to 14 years (T1: $M = 12.3$, $SD = 0.51$). At T1, 89.2% of the respondents lived with both their parents, and 9% lived in a single parent home (8.1% with their mother and 0.9% with their father). A total of 1.8% lived in other arrangements (e.g., with other family members, foster home).

The nonattendance at wave 1 was only due to absence on the day of measurement. None of the parents refused permission to include their child in our study, and none of the kids explicitly refused to participate. Sample drop out over the waves was primarily due to (a) students moving to a different city and therefore a different school, (b) students who did not pass the exams at the first grade and had to repeat the grade, and (c) school drop out.

**Measures**

**Alcohol use.** Frequency and intensity were assessed identically as in Study 1. For assessment of reciprocal best friend’s drinking we used best friend’s own reports on drinking.

**Best friend.** An adaptation of the format of Ennett and Bauman (1994) to assess peer relations within school settings was employed. Respondents were asked to write down the first name and first letter of the family name of their best friends (with a maximum of five). In contrast with Ennett and Bauman (1994) respondents were not restricted to friends at school. Furthermore, respondents had to indicate whether the friends were students at their school. We only focused on friendships at school; friends outside the school context were not included in the sample. The first friend in the list who could be matched was considered the best friend. The reciprocity in friendship was established by the software ‘MAKEDYAD’ (Thissen-Pennings & Bendermacher, 2002). Friendship was considered to be reciprocal when the respondent’s friend also named the respondent in his or her list of friends.

Concerning friendships, it appeared that at T1 253 (16%) adolescents reported to have no friend at school at all, 193 (12%) reported to have a non-reciprocal best friend at school, and 1149 (72%) had a reciprocal best friend at school. At T2 255 (16%) had no friend at school, 212 (13%) not a reciprocal friend, and 1128 (71%) a reciprocal friend. At T3 these figures were respectively 215 (14%), 196 (12%) and 1184 (74%).

**Results**

**Descriptive Analyses**

The average quantity of drinking was 1.39 glasses (SD = .92) at T1, 1.87 (SD = 1.39) at T2, and 2.25 (SD = 1.54) at T3 for boys, and 1.22 glasses (SD = .67) at T1, 1.53 (SD = 1.08) at T2, and 1.79 (SD = 1.25) at T3 for girls. The average frequency of drinking was 1.37 (SD = .66) at T1, 1.67
(SD = .93) at T2, and 1.93 (SD = .93) at T3 for boys; 1.22 (SD = .53) at T1, 1.42 (SD = .71) at T2, and
1.73 (SD = .82) at T3 for girls. These data that only a limited number of participants were drinking
substantially and frequently.

The relative stability of alcohol consumption over time was high (frequency F(2, 1009) =
182.29, $p < .0001$; intensity $F(2, 1009) = 141.96, p < .0001$). Post-hoc comparisons showed significant
increases in the amount as well as in the frequency of alcohol consumption for both sexes. Sex effects
were also significant for alcohol use (frequency $F(1, 1010) = 27.51, p < .0001$ and intensity $F(1, 1010) =
32.35, p < .0001$), that is, boys reported high drinking levels and higher frequency of drinking than
girls.

Pearson correlations showed that the associations between (mutual) best friend’s drinking and
adolescent drinking were: quantity of drinking: $r (773) = .21, p < .001$ at T1, and $r (771) = .31, p <
.001$ at T2; frequency of drinking: $r (773) = .19, p < .001$ at T1 and $r (736) = .20, p < .001$ at T2. Thus,
there seemed to be a small to moderate correlation between adolescents’ and their best friends’
intensity and frequency of drinking. Our main interest, however, was the impact of best friends’
drinking on the longitudinal prediction of adolescents’ alcohol use. The next set of analyses aimed to
address this question.

### Table 2
Hierarchical Regressions predicting Frequency and Intensity of Drinking at T2 and T3: Longitudinal
Analyses

<table>
<thead>
<tr>
<th></th>
<th>T1 – T2</th>
<th>T2 – T3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Intensity</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking Respondent T1</td>
<td>.38***</td>
<td>.43***</td>
</tr>
<tr>
<td>Drinking Friend T1</td>
<td>.07*</td>
<td>.08**</td>
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<tr>
<td>Sex</td>
<td>-.11***</td>
<td>-.08*</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking Respondent T1</td>
<td>.38***</td>
<td>.44***</td>
</tr>
<tr>
<td>Drinking Friend T1</td>
<td>.09*</td>
<td>.02</td>
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<td>Sex</td>
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<tr>
<td>Sex * Drinking Friend</td>
<td>.06</td>
<td>-.12***</td>
</tr>
</tbody>
</table>

**Note.** Included are standardized parameters ($\beta$). Alcohol of friends are self-reports by the reciprocal
friend at that specific moment. Quantity: $N = 773$ (T1 – T2), $N = 771$ (T2 - T3). Frequency: $N = 773$
(T1 – T2), $N = 736$ (T2 - T3).

### Regression Analyses

**T1 – T2.** Multiple regression analyses were conducted, quite similar to those reported in Study
1, with previous participant’s alcohol use, best friend’s alcohol use, and sex in the first step of the
analyses, and the interaction term between best friend’s alcohol use and sex in the second step (Table
2). Strong engagement in drinking of the best friend was related to higher frequency and quantity of
drinking in participants. Boys drank more intensely and more often than girls. An interaction was
found between quantity of best friends drinking and sex. Separate regressions showed no association between best friend’s use and participant’s use (Beta = -.08, p = .12) for women, but a small association for men (Beta = .15, p = .001).

T2 – T3. As illustrated in Table 2, in a second series of analyses predicting alcohol use at T3 with T2 predictor variables showed that best friend’s drinking was associated with participant’s frequency of drinking over time, whereas no associations were found between best friend’s quantity of drinking and participant’s use. Sex was only related to intensity of drinking. An interaction between best friend’s frequency of use and sex was found, showing no associations between best friend’s drinking and participant’s use for men (Beta = .03, p = .60), but instead for women (Beta = .14, p = .002).

Summarizing, from these analyses we know that (a) there is a high relative stability of drinking over time, (b) the associations between best friend’s alcohol use and adolescent use are small or non-significant, and (c) interactions between best friend’s use and sex occurred, in one occasion resulting in a stronger effect for boys, and in the other for girls. Combining results from the first and second study, it seems there are non-existent or very weak effects of peer drinking on their friends’ alcohol use over time. Sex also seems to have hardly an effect on the associations between best friend and adolescent use. In the third study we look at this issue by using data of an observational study.

**Study 3:**

**An Observational Study of Young People’s Drinking in a Naturalistic Setting**

**Methods**

**Participants**

Participants were 238 late adolescents and young adults who voluntarily participated. They entered our laboratory setting as a group. An undergraduate student invited 6 to 8 friends to join them for this research project. A total of 30 peer groups enrolled. The majority of the groups (n = 27) consisted of 8 persons. A total of 128 men (54%) and 110 women (46%) participated, ranging in age from 18 to 28 years. 203 (85%) participants had at least finished pre-university education, which indicates that this study involved participants with a relatively high educational level. 94 participants (40%) considered themselves religious, even though only 11 of them (5%) indicated to attend religious meetings one or more times per month. Fifty of the respondents (21%) indicated they lived with their parents or other caretakers, whereas the others indicated they either lived alone, or with a partner or friend. The constellation of the groups differed from all men (7%) and all women (7%) to mixed sex (86%).
CHAPTER 8 – sex differences in susceptibility to peer influences

Procedure

All details about the procedure of this project are fully explained in Bot et al. (2005b). Participants were invited to join a study about the effects of alcohol on group discussions and judgment. The groups had been invited to our bar lab for two sessions in one year. The first session lasted 2 hours and took place in a bar laboratory at our campus. This bar lab was situated in a room furnished like an ordinary small pub, with a bar and stools, tables and chairs, and indoor games like table soccer, billiards, pinball machine, with a few comfortable couches and a TV/video as well. During the sessions the radio played popular music. Volume and type of music were kept unchanged over the groups.

First, after participants had entered the bar lab, the procedure of the study was explained to them. Then, they were asked to fill in a questionnaire containing various questions about drinking patterns, expectancies, friendships, and types of relationship within the group. This took about 40 minutes. Next, they evaluated 10 persons by pictures shown on the TV screen. i.e. they each wrote down whether they thought these persons were attractive and intelligent, after which they had 30 seconds for each picture to discuss among the other group members. These tasks were constructed to be undemanding and participants’ judgments were asked in such a way that it was impossible to give incorrect answers. Therefore the amount of alcohol consumed would not be less as a result of some participants’ urges to do well on these tasks. During the completion of the questionnaire and its evaluation non-alcoholic drinks were served. After completing these tasks, which took about 10 minutes in total, they had a 50-55 minutes time out which had to be spent in the bar lab. They could play some of the available games, watch TV, or have conversations. Participants were told that they could order a drink at the bar. Soft alcoholic beverages (i.e. beer, wine) and non-alcoholic drinks were available for free (Footnote 2 about here). Nuts and chips were offered for free as well. After the 50-55 minutes free time slot, a second task, similar (but with different pictures) to the first one had to be completed. This task took the same amount of time as the first. After 2 hours, the participants went home by taxis. They received 30 euros per group for their participation.

During the 2-hour session, video and audio recordings were collected. Two cameras were used (one flexible with zoom and one steady), hidden in two corners of the bar lab. A research assistant operated the camera in an observation room adjacent to the bar lab. Participants were told in advance that they would be observed during these 2 hours and all gave written permission for the use of these data for our study.

The research proposal was approved and granted by the Dutch Foundation for Scientific Research. The medical ethical committee (CCMO Arnhem-Nijmegen) approved of the protocols for our study. Full debriefing of participants was done after the second assessment. Data from the questionnaires were entered in SPSS 12.0. The video and audio recordings were coded in The Observer 4.1 (Noldus). We did not code the behaviors during the tasks, as we were interested in social and drinking behaviors during the free time slot.
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A coding scheme assessed general activities (e.g., playing billiards and pinball, talking), alcohol specific activities (e.g., asking for drinks, ordering, obtaining drinks), and company (e.g., with whom they interact) during the 52 minutes break. The coding scheme can be obtained from the second author. All coding had taken the precise time of the session into account. Thus, we were able not only to assess how many (alcoholic) drinks each individual consumed, but also when, in what order, with whom, and during what activity. Five trained research assistants did the coding. Preceding analyses showed that the coding was done in a reliable way (Bot et al., 2005b).

Concerning the analyses of the observational data, we had to omit two groups. One because of technical problems with video equipment leading to incomplete files and another because the group members decided to do a drinking game during the time out session. In the latter group, individual drinking could, of course, not be predicted by possible explanatory variables, but only by chance and possible experience with this drinking game. It should be stressed that drinking games were not played in the other 28 groups.

Credibility of Setting. Pilot studies were conducted to verify the credibility of the setting and procedure. Participants strongly endorsed the credibility of the setting and not one of the 32 participants in the pilot studies guessed the actual aim of the study. Participants were allowed to smoke during the session (if the other group members approved), for we noticed in pilot studies that preventing smokers from smoking while drinking strongly affects the feasibility of a normal drinking occasion for them. There is substantial evidence for the reliability and credibility of examining alcohol use in groups in a bar laboratory setting (see for an extensive discussion, Bot et al., 2005b).

Measures

Alcohol use (self-reports). Participants were asked to fill in how many drinks they would normally drink in sixty minutes when going out (e.g., café, pub, and discotheque). They had to give answers about the number of alcoholic and non-alcoholic drinks. Heavy drinking was assessed by the frequency of 6+ drinking with responses ranging from 1 ‘never’ to 7 ‘more than twice a week’ (Engels et al., 1999). We assessed frequency of drinking by asking about how often participants drank in 9 specific settings in the past 4 weeks. The following settings were included: parental home, own home, friend’s home, at a party, youth/student organization, sport canteen, disco, music festival or rave, and café. Responses ranged from 1 ‘never’ to 6 ‘every day’. The overall mean scores over these 9 settings were calculated.

A short version of the Severity of Problem Drinking scale (Cornel, Knibbe, Van Zutphen & Drop, 1994) was employed to assess the level of problems due to alcohol consumption. Factor analyses with LISREL 8 (Jöreskog & Sörbom, 1993) on a large data set of 6205 adults showed a clear one-factor solution for the total scale. A screening instrument of 6 items matched satisfactorily with scores on the total scale consisting of 15 items \( R^2 = .92 \). Examples of items were: “Did you ever try to quit drinking without being successful?” and “Did your partner or close relatives ever worry about your alcohol consumption, or complain about it?” Answers were on a dichotomous scale.
Alcohol Expectancies. We employed an instrument to assess people’s expectancies about the effects of alcohol on their own functioning (see Wiers et al., 2002). Four subscales were employed (Social, Enhancement, Sexual Arousal and Power). Cronbach’s alpha were for all subscales higher than .75 (for information on psychometric properties, see Wiers et al., 2002; Bot et al., 2005b).

Alcohol use (observational data). We counted the number of drinks consumed in the 52 minutes ad-lib drinking session. This study included only the number of alcoholic drinks consumed. If participants did not finish their drinks at the end of the session, we subtracted the rest of the volume from the total consumption. To assess the amount of alcohol consumed by each participant, their recordings were observed one by one. Further, we divided the number of glasses of beer consumed by 1.5, because the beer glasses that were used consisted of less alcohol than the wine glasses, and were smaller than standard glasses. In all sessions the same glasses were used and filled to the same level. The contents of beer glasses were on average 160 ml and the contents of wine glasses 110 ml. The (lager) beer contained 5% alcohol, which means that a glass of beer contained on average 8 ml pure alcohol. The wines we offered contained from 11 to 12% alcohol, so a glass of wine would contain from 12.1 to 13.2 ml of alcohol.

Strategy for Analyses

Before we answered our research questions, we conducted descriptive analyses on sex differences in alcohol use. We took several steps in our analyses.

First, women may be less context-dependent, at least when it comes to drinking, and may be primarily led by what they normally drink more than by the specific persons they are out with on a specific occasion. Men, in contrast, may be more influenced by their peers in particular contexts. This would suggest that the relation between what women normally drink when going out in the “real world”, or even their average weekly drinking level, and the alcohol consumed in the bar lab is stronger than for men. We conducted Pearson correlations to test this assumption.

Second, we hypothesized that the specific peer group in general affects the participants’ drinking levels. These kinds of data are often referred to as nested data, because characteristics or objects within one level are nested within characteristics or objects of another level (Van der Valk, 2004). In this case, there is intra-group dependency in alcohol consumption, reflected in the intra-class correlation. The intra-class correlations show that, concerning drinking levels, a proportion of the variance can be ascribed to differences between groups (in our case of the total sample, the intra-class correlation is: \( r = .46, p < .001 \)). Multilevel analyses (MLwiN 1.1) were conducted to examine the relation between sex and drinking levels. These were conducted with sex, average drinking level in the group, and the interaction between these two, as independent variables, and individual drinking levels as dependent variables.

Third, we tested whether their own alcohol expectancies affect women more strongly than men with interaction terms in multilevel analyses, in which we controlled for the effect of drinking by
CHAPTER 8 – sex differences in susceptibility to peer influences

peer group members. This permits us to test the effects of these cognitions above the effects of modeling in the group.

Fourth, we tested to what extent the average alcohol expectancies of peer group members affect males and females drinking differently. In these multilevel analyses we controlled for the influence of peer group drinking. That allows us to draw conclusions on the independent effects of these outcome expectancies held by peer group members.

Results

Descriptive Analyses

Concerning self-reported alcohol consumption almost all participants (99%) reported consuming alcohol some time in their lifetime. Robust differences between men and women in drinking were apparent. Male participants reported a stronger engagement in 6+ drinking (M = 5.65 vs. M = 4.54, \( t \) (238) = 6.61, \( p < .001 \)), a higher weekly consumption (M = 21.76 vs. M = 10.39, \( t \) (238) = 6.11, \( p < .001 \)), to consume more drinks per hour when being out (M = 4.25 vs. M = 2.53, \( t \) (238) = 5.91, \( p < .001 \)), and they scored higher on the problem drinking scale (M = 7.51 vs. M = 6.77, \( t \) (238) = 4.77, \( p < .001 \)) than females.

Only 4.3% of participants did not consume any alcoholic beverages in the bar lab. Alcohol consumption ranged from 0 to 7.5 glasses, with a mean of 2.75 (SD = 1.43). Strong sex differences were found: Men appeared to consume more alcoholic beverages (M = 3.31, SD = 1.45) than women (M = 2.02, SD = 1.02; \( t \) (221) = 7.41, \( p < .001 \)). In terms of total liquor consumption, by adding up alcoholic and non-alcoholic consumptions men in general appeared to consume more than women.

Associations between Questionnaire Data on Alcohol Use and Observational Data

If women are less context-dependent than men when it comes to drinking, one might expect that women’s drinking levels in the bar lab correspond more strongly to their regular drinking habits. This appears to be the case. In contrast, for women, frequency of use (r (97) = .29, \( p < .01 \)), quantity of drinking in the past week (r (97) = .32, \( p < .001 \)), and frequency of binge drinking (r (97) = .46, \( p < .01 \)) correlated significantly with level of drinking in the bar lab. For men, frequency of use (r (124) = .17, ns) and frequency of binge drinking (r (124) = .15, ns) was not correlated with observed drinking. Quantity of drinking in the past week (r (124) = .19, \( p = .03 \)) correlated marginally with observed drinking (Footnote 3 about here).

Sex Differences in Susceptibility to Peer Drinking

Multilevel analyses were conducted with sex and average alcohol consumption in the group as independent variables, and individual drinking levels as dependent variables. We tested both fixed and random effects. The fixed effects are the regression weights of the independent variables, and the random effects indicate the variance in the regression weights between groups. If a random effect is
found, this means that the magnitude of the relations between an independent variable and a dependent variable varies across groups.

Table 3
Multilevel Analyses on Young Adult Drinking in a Peer Context: Effects of Sex and Average Peer Group Drinking

<table>
<thead>
<tr>
<th></th>
<th>Empty Model</th>
<th>Model 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Values (SE)</td>
<td>Values (SE)</td>
</tr>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Individual Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>2.75 (0.20) **</td>
<td>0.06 (0.33) n.s.</td>
</tr>
<tr>
<td>Sex</td>
<td>0.26 (0.39) n.s.</td>
<td>0.26 (0.39) n.s.</td>
</tr>
<tr>
<td><strong>Group Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Drinking</td>
<td>0.98 (0.07) **</td>
<td></td>
</tr>
<tr>
<td><strong>Cross-level Interaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex X Group Drinking</td>
<td>-0.41 (0.18) **</td>
<td></td>
</tr>
<tr>
<td><strong>Random Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Individual Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.99 (0.30) **</td>
<td>0.83 (0.08) **</td>
</tr>
<tr>
<td><strong>Group Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>1.05 (0.08) **</td>
<td>-</td>
</tr>
</tbody>
</table>

\[ \chi^2 \text{ (as compared to empty model)} = 696.68 \text{ (} \Delta \text{df} = 3) \]

Note. N = 221. Presented values are significant at the 0.05 level, or main effects from a significant interaction effect. Non-significant values are omitted from the analyses.

In the multilevel analyses we found that after we included the interaction between sex and average group levels into the equation, sex no longer predicted individual drinking levels (Table 3). The interaction term was highly significant, indicating that average drinking levels in a group had a stronger impact on individual drinking for men than for women. Additional analyses showed that peers drinking levels do weakly affect women and that they affect men strongly. No random effects were found (Footnote 4 about here).

**Expectancies and Individual Drinking**

Multi-level analyses were conducted with sex, average group drinking, expectancies, and the two interaction terms sex*average group drinking and sex*expectancies. Four series of analyses were conducted, separately for the four expectancy scales Social, Enhancement, Sexual Arousal and Power. Average group drinking was included to examine the effects of outcome expectancies above the impact of peer drinking (Table 4).
CHAPTER 8 – Sex differences in susceptibility to peer influences

Table 4
Multilevel Analyses on Young Adult Drinking in a Peer Context: Effects of Individual Alcohol Expectancies

<table>
<thead>
<tr>
<th></th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Values (SE)</td>
<td>Values (SE)</td>
<td>Values (SE)</td>
<td>Values (SE)</td>
</tr>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Individual Level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-0.34 (0.31) n.s.</td>
<td>-0.45 (0.30) n.s.</td>
<td>-1.43 (0.67) *</td>
<td>0.14 (0.25)n.s</td>
</tr>
<tr>
<td>Sex</td>
<td>-0.59 (0.13) **</td>
<td>0.13 (0.38) n.s.</td>
<td>0.15 (0.37) n.s .</td>
<td>-0.55 (0.13)**</td>
</tr>
<tr>
<td>Expectancies:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>0.24 (0.06) **</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhancement</td>
<td>0.24 (0.07) **</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual Arousal</td>
<td></td>
<td></td>
<td>0.23 (0.06) **</td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td></td>
<td></td>
<td></td>
<td>0.16 (0.06)**</td>
</tr>
<tr>
<td><strong>Group Level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Drinking</td>
<td>0.86 (0.06) **</td>
<td>0.94 (0.07) **</td>
<td>1.23 (0.19) **</td>
<td>0.87 (0.06) **</td>
</tr>
<tr>
<td><strong>Cross-level Interaction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex X Group Drinking</td>
<td>-0.28 (0.14) *</td>
<td>-0.44 (0.21) *</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Random Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Individual Level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.80 (0.08)**</td>
<td>0.78 (0.08) **</td>
<td>0.77 (0.07) **</td>
<td>0.822 (0.08) **</td>
</tr>
<tr>
<td>Deviance</td>
<td>576.98</td>
<td>565.11</td>
<td>569.43</td>
<td>581.13</td>
</tr>
<tr>
<td>$\chi^2$ (df=3)</td>
<td>119.70</td>
<td>131.57</td>
<td>127.25</td>
<td>115.55</td>
</tr>
</tbody>
</table>

Note. N = 221. Presented values are significant at the 0.05 level, or main effects from a significant interaction effect. Non-significant values are omitted from the analyses.

We found that all expectancy scales are significantly and positively associated with observed individual drinking levels. No sex differences were found suggesting that men and women are similarly affected by their opinions concerning the effects of their drinking on their functioning. In all analyses no random effects were found indicating that there were no differences between groups in the effects of expectancies on individual drinking.

Group Expectancies and Individual Drinking

In addition, we calculated the average scores on the four expectancy scales for all the groups. We then computed multi-level analyses with sex, average group drinking, average group expectancy scores, and the two interaction terms sex*average group drinking and sex*average group expectancies as independent variables, and individual drinking as dependent variables. Once again separate analyses were conducted for the four expectancy scales. The findings showed no significant effects of average levels of social, enhancement and power expectancies on individual drinking.
Table 5
Multilevel Analyses on Young Adult Drinking in a Peer Context: Effects of Sexual Arousal Expectancies of Peer Group Members

<table>
<thead>
<tr>
<th></th>
<th>Empty Model</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Values (SE)</td>
<td>Values (SE)</td>
</tr>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Individual Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>2.75 (0.20) ***</td>
<td>-0.46 (0.55) n.s</td>
</tr>
<tr>
<td>Sex</td>
<td>1.72 (0.97) n.s</td>
<td>1.72 (0.97) n.s</td>
</tr>
<tr>
<td><strong>Group Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Drinking</td>
<td>0.86 (0.07) **</td>
<td>0.86 (0.07) **</td>
</tr>
<tr>
<td>Expectancies: Sexual Arousal</td>
<td>0.33 (0.18) n.s.</td>
<td>-0.71 (0.30) **</td>
</tr>
<tr>
<td><strong>Cross-level Interactions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex X Group Expectancies Sexual</td>
<td>-0.71 (0.30) **</td>
<td></td>
</tr>
<tr>
<td><strong>Random Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Individual Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.99 (0.30) **</td>
<td>0.83 (0.08) **</td>
</tr>
<tr>
<td><strong>Group Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>1.05 (0.08) **</td>
<td>-</td>
</tr>
<tr>
<td><strong>Deviance</strong></td>
<td>696.68</td>
<td>584.65</td>
</tr>
<tr>
<td>$\chi^2$ (as compared to empty model)</td>
<td>112.03 ($\Delta$ df = 4)</td>
<td></td>
</tr>
</tbody>
</table>

Note. N = 221. Presented values are significant at the 0.05 level, or main effects from a significant interaction effect. Non-significant values are omitted from the analyses.

However, for expectancies on sexual arousal we found a strong interaction between sex and average expectancy scores (Table 5). Additional analyses showed that high group average scores on sexual arousal affect men’s drinking positively and women’s drinking negatively. In other words, when women are in a group with peers holding the expectation that drinking leads to sexual arousal, they drink less than when they are in a group with peers who do not have these specific anticipations. For men it is entirely the other way around: they drink more when they are in the company of people who think that alcohol will arouse them sexually.

**General Discussion**

“With the lights out, it's less dangerous. Here we are now, entertain us. I feel stupid and contagious. Here we are now, entertain us” (Nirvana)

In the present study, we aimed to test sex differences in susceptibility to peer influences on alcohol consumption. In addition, we tested why young men and women differ in the extent to which peer
group members affect them. Data from two longitudinal surveys and an observational study were used to examine these issues.

First, the findings from the surveys clearly show that best friend’s drinking is only marginally related to the development of drinking in early and mid adolescents. This coincides with results of other prospective studies conducted in North American (e.g., Fisher & Bauman, 1988; Jaccard et al., 2005; Urberg et al., 1997) and European samples (e.g., Engels et al., 1999). Furthermore, we did not found consistent sex differences in the extent to which best friends affect individual drinking behavior over time. A strong feature of the school-based survey (Study 2) is that we used data from the friends themselves in order to prevent the shared-rater bias (i.e. artificially high correlations due to individual reports on both independent and dependent variables) and the false consensus effect. However, this did not lead to higher estimates of peer influences as compared to Study 1 in which we did not have reports by best friends. Further, some researchers argue that peer influences can only be observed in short-term prospective studies (see discussion in Engels, Knibbe & Drop, 1999b). However, both our prospective studies had relatively short periods between the waves (12 and 6 months respectively); so, if peer influence would be operating our designs should be suitable to detect this. Additionally, although we exclusively focused on the role of best friend’s drinking and not on the role of drinking by peer group members, various studies have shown that the more closer a peer is to the adolescent the more influence he or she has (Hartup, 2000; for empirical data see; Engels et al., 1999b; Urberg et al., 1997). Therefore, we assume that if we had collected data in our surveys on drinking by peer group members we would not have found stronger support for existence of peer influences.

Second, in the observational study we indeed found a strong indication for peer group influences operating on individual drinking. It appeared that individuals, who are in a group dominated by heavy drinking peers, are more likely to drink heavily themselves. Further, this effect is much stronger for men than for women. Men in particular are likely to adapt to the prevailing drinking norms of the peer group. These findings clearly suggest that for men it is more important to conform to group norms when it comes to drinking (cf. Suls & Green, 2003). We also found evidence for the assumption that drinking is more context-dependent for men. Women seem to stick more to what they normally drink, and appear to be less affected by the specific situation they are in, whereas even men who normally drink moderately can drink substantially when they are in a group of heavy drinking peers.

We have to make one remark about the interpretation of these findings. Our observational study does not have a longitudinal design; we observed processes of peer influences in real time but not over time. One may argue that our interpretation of strong homogeneity of drinking in peer groups in terms of peer influence is inaccurate as selection processes can explain this homogeneity as well. This is only partly true. In the first place, our procedure, in which one person invites seven people to the bar lab, has led to a wide variation of peer relationships within the groups. Some groups indeed consist of primarily close friends who know each other for a relatively long time, whereas in other
CHAPTER 8 – sex differences in susceptibility to peer influences

groups people hardly knew each other. To prevent occurrence of selection processes the only possibility is to conduct observations in groups of people who do not know each other in advance. The disadvantage of this approach is that it is barely the natural context of drinking of adolescents and young adults as they primarily drink with acquaintances, friends, class-mates or fellow students. Please note that our findings are in line with those of experimental observation studies in which people strongly imitate alcohol consumption of even complete strangers (Quigley & Collins, 2001). In the end, our own qualitative impressions, when we watched the DVDs of the groups, were clearly that in many of the groups people were imitating alcohol consumption of others, and that consumption was often instigated by one or two peer group members who took the lead. A nice example for the existence of modeling processes stems from one of the groups in which two male members were sitting at the bar talking to each other for the total duration of the break and did not pay any attention to the other members. This dyad not only had the same number of beers, but even their pace of drinking and taking sips was the same. This adaptation to each other’s behavior can also be found in observational studies focusing on communicational patterns (Granic & Dishion, 2003). All in all, this suggests that these observational data provide preliminary evidence that peer influences occur when it comes to drinking. It also implies that longitudinal surveys show only very limited effects of peer drinking on individual alcohol consumption over time and might underestimate the existence of peer influence processes.

Our findings demonstrated that, even after controlling for the powerful effects of average drinking by peer group members, the individual expectancies about the outcomes of drinking affect drinking quantities in a social situation (see Lee et al., 1999). We expected that women were more strongly guided in their drinking by their ideas about how alcohol would affect them, while men were primarily guided by what other members of the peer group drink (Suls & Green, 2003). Interestingly, the magnitude of the effect of the four expectancy scales (i.e., social, enhancement, sexual arousal, and power) did not differ for men and women. This presumes that women like men, when they think alcohol leads to sexual arousal or to feelings of power and strength, are more likely to drink substantially in the bar lab.

However, men and women do, indeed, differ when it comes to the prevailing expectancies on sexual arousal in the peer group. While men, when they are in a group with high scores on sexual arousal expectancies, tend to increase drinking; women tend to drink less when they are in this kind of group. Although we do not know if and how these high average scores in certain peer groups are reflected in actual behavior, it seems that women want to retain some control over the situation when being with peer group members who drink a lot and also think that alcohol leads to sexual arousal. They perform control by drinking less. That is why they stop after one or two drinks. On the other hand, when women, similar to men, are in groups that score high on social and enhancement expectancies, this does not affect their own drinking. Apparently, in the company of peers who hold this type of outcome expectancies they do not find it necessary to stop drinking. These findings
suggest that although women are not largely affected by their peer’s drinking, they are indeed susceptible for peer group influences: their drinking is affected by peer expectations on the effects of drinking, rather than by drinking itself.

Cultural differences

One can only speculate whether peer influences operate differently in men and women in various cultures. We will give two examples. First, in some countries there seem to be a stronger convergence in drinking between men and women. In the UK young women seem to catch up with men (Hibell et al., 2004). It is possible that if we observe their drinking behavior in mixed sex groups they would be imitating peer drinking, equally to men. Second, when a youth culture is dominated by excessive drinking (i.e. drinking to get intoxicated) it is possible that women are much more aware of the negative consequences that alcohol use might have when being in a mixed-sex peer group. While in countries where people not necessarily drink to get drunk, like in some of the Mediterranean countries, and men do not drink that much at a specific occasion, women tend to be less careful about limiting their own drinking. Therefore, to go beyond speculation on cultural differences it requires observational research on drinking in peer groups and friendships in other countries and cultures.

Limitations

We would like to focus on some of the shortcomings of the observational study. The first is that although we have a substantial sample of 238 young adults, they are clustered within only 30 groups. This strongly limits the opportunity to conduct analyses for various subgroups (like same-sex groups) but also limits the generalizability of the findings. Secondly, although drinking levels in this observational setting are corresponding to what people normally drink, our setting is of course not representative for a normal evening out with friends: they generally spend more time together when being out, and therefore alcohol consumption might be spread more over the evening. We also disregarded social interactions with other persons in the bar. We decided not to invite other groups into this study because this would make the situation too complex to study. The central aim of the project was to examine processes in drinking in existing social groups. Thirdly, we only concentrated on first and second year university students, which hampered the generalizability of our findings. Fourthly, we might have attracted those students with structurally high consumption patterns. Although the average frequency and quantity of drinking were rather high compared to the normal population or to other non-student peers, it did not diverge from the typical university student in the Netherlands. There are hardly any other age categories or subgroups in the Netherlands that show higher drinking levels than university students (Poelen et al., 2005a). It should be stressed that one likely encounter ethical problems planning to conduct observational studies on drinking in adolescent samples using a bar lab.

Social Interactions and Alcohol Use: Future Directions

Real time measurements of social interactions are necessary to get a grip on processes in peer groups (see review by Granic & Patterson, 2006). Especially observational methods can provide
excellent tools to examine how social interactions are related to individual alcohol consumption. A few directions for future research will be discussed to come to a more comprehensive understanding on why some youngsters adopt peer norms and others do not.

In our paper we did not look at how the various types of relationships that exist in groups. Some groups consist, like in real life, of weak ties and people hardly know each other, while other groups consist of friends who have known each other for a long time. One might assume that within long-lasting peer groups – in which selection processes already have taken place (Footnote 5 about here) – it is more likely that deviation from the norm by individual members will be more easily accepted than in groups that have just been formed. In the latter groups young people discourage deviance, individuals may be more likely to be socially excluded, and they are therefore expected to conform to group norms. In addition, people fulfill different roles in a specific group. Some members are more popular than others, and some are regarded as more dominant than others. It would be interesting to examine whether social positions within the peer group are related to people’s tendency to adopt drinking behaviors. One may assume that popular and dominant members are more likely to be in the lead when it comes to drinking, as this is also partly anticipated by the others (see Engels et al., 2006). The less popular, more permissive members may be more likely to follow the popular and dominant ones, and may feel more obliged to drink when the others are drinking.

Besides the roles of different types of relationships within peer groups, it is interesting to analyze what kind of social influence processes are unfolding in groups. This, of course, depends largely on the history of the group, the specific set of relationships within the group, the specific context people are in, the individual expectations people have about alcohol, and their regular drinking patterns. These all form conditions for the starting point of the interaction processes. For instance, our findings on women who drink less when they are in a group with members who think that drinking leads to sexual arousal presuppose that women stop drinking at a certain moment, especially when they realize that a situation might be too dangerous or risky. This poses the question what would some women do in this particular context; do they try to avoid the heavy drinking males and seek company of other men, or do they seek company of other females to get some support? Perhaps what they will undertake depends on the group constellation; when girls are with only girls less control is needed, whereas when males dominate the group, they feel obliged to control their drinking rates. This urges for the need to visualize and quantify the order of social interactions over time. A method to investigate these interactions in more detail are analyses with State-Space Grids (SSG), a method developed to examine sequences of nonverbal and verbal interactions in dyads with real time quantitative data (see Granic, Hollenstein, Dishion & Patterson, 2003; Granic & Hollenstein, 2003). With this method, the behavioral trajectory (i.e., the sequence of behavioral states) is charted as it proceeds in real time on a grid representing all possible behavioral combinations (Granic et al., 2003). The method enables us to look at what moment in time people try and stop conforming to group norms, and to get an idea of why this is taking place. It might be that an individual woman, for
example, consumes a few drinks together with a few men in the group, but at a certain moment in time she would stop drinking and seek the company of other women in the group. The SSG analyses also allow analyzing whether women, after having a few drinks, seek the company of members who do not get sexually aroused by drinking alcohol.

Finally, it would be intriguing to examine in more detail how communication patterns in peer groups are related to drinking. Dishion and Granic (2003) showed that some peers are in their interactions drawn into deviant talks. When at a certain moment friends talk about deviant topics they are incapable of abandoning this state; they talk about these issues all the time. These types of friends are much more likely to be engaged in problem behaviors, such as delinquency and heavy drug abuse, in young adulthood. Translated into the case of drinking in peer groups, not only the topic of communication (what they talk about) but also the development of communication (do they talk about drinking all the time) might affect continuation of drinking, resulting in heavy drinking levels. If their communication becomes more open and reciprocal over time that might affect the extent to which they stay together in that hour, and if so, the extent to which they continue to imitate each other.

In sum, the current analyses focusing on gaining insight into why men and women differ in susceptibility to peer influences is a start and still does not take into account the various types of relationships that exist within and between groups, nor does it focus on the actual real time development of interactions. We assume that this kind of interaction analyses is necessary to move forward, as it is not the question if peers do matter, but how these peer influence processes actually operate.
1. We are conscious that in the past decades a trend has come up in some countries for women to go out in (large) same-sex groups and to drink like hell. As we have only a few same-sex groups in our sample, it is not possible to look into this in more detail. However, it would be fascinating to conduct observational research on social influence processes in same-sex groups.

2. It should be stressed that the uncorrected figures on drinking showed stronger sex differences. Correcting for the fact that women were more likely to drink wine (served in larger glasses than beer) led to smaller differences in drinking between men and women.

3. With average group level of drinking we imply the average score of alcohol the group members consumed in the bar lab, but without the score of the participant included. Inclusion of the participant in the score would inflate the associations.

4. As we found no random effects in any of the multi-level analyses we did not report them. The absence of random effects in these analyses implies that the effects we found did not differ between groups.

5. We assume that selection processes can better be studied with longitudinal designs that are able to trace, for example, how friendships are initiated and developed over time. The combination of real time measurements of what happens in terms of social interactions between friends with over time developments of these friendships is perhaps the most promising endeavor.
CHAPTER 8 – sex differences in susceptibility to peer influences

References


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Pastime in a Pub: Observations of Young Adults’ Activities and Alcohol Consumption

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Abstract

Alcohol consumption typically takes place in a time out situation, which can be spent by engaging in several leisure time activities. Usually conversation is the dominant pastime in a bar, but this may take place during other activities, like watching TV or playing games. These activities may inhibit drinking because of the physical difficulties of drinking and being active at the same time. Findings of an observational study on drinking in young adults (N = 238) in a bar lab will be discussed. In the present study, we followed the ad-lib drinking of peer groups (7 - 9 persons) during 1h periods. The results suggest that 1) selection of activities is not related to initial drinking level or personality characteristics; 2) active pastime is related to slower drinking than passive pastime (in males); 3) male problem drinkers appear to compensate for the “lost” amount of drinking after an active phase; and 4) involvement in active pastime is not related to total alcohol consumption. Implications of these findings are discussed.
A limited number of studies have focussed on contextual (Choquette, Hesselbrock, & Babor, 1985; O’Hare, 2001) or situational (e.g., Babor, Mendelson, Greenberg & Kuehnle, 1978; Bach & Schaefer, 1979; Demers et al., 2002; Kriebel, Van de Goor & Drop, 1993; Van de Goor, 1990) characteristics that may predict alcohol consumption. These studies showed that factors such as drinking location, day of the week, group size, and gender composition of the drinking group are related to differences in drinking. Demers et al. (2002) examined the contribution of drinking setting and individual characteristics to reported alcohol intake per drinking occasion and found that situational characteristics, such as group size and type of relationship with others of the same drinking group might explain as much variance in alcohol consumption as individual characteristics, such as gender and living arrangement. By observing drinking behaviour of youngsters in pubs, discos, and youth centres Van de Goor (1990) found, e.g., that in larger groups and in places with a higher volume of music broadcasted, more alcohol is consumed. As far as we know Van de Goor is also the only researcher to date who examined the relation between activities and drinking of youngsters in the same situation. She found that youngsters who were involved in active forms of pastime (like playing games or dancing) drank less than others who were involved in more passive pastime (like conversation) when going out.

These findings were based on thorough observations of actual drinking situations, which we consider an accurate way to evaluate the effects of activities on general alcohol consumption. Nevertheless, this type of research method does not allow drawing conclusions about the causes of the differences in drinking rate between individuals (i.e. do slower drinkers choose certain activities? or do these activities inhibit drinking?). Neither did her method give insight into the consequences of being involved in activities for alcohol consumption over a longer period. Unfortunately, to our knowledge, no studies yet have examined the interrelationship between activities undertaken in a bar setting and individual differences in drinking.

Theoretically, offering young people ways to spend their time actively might be an elegant approach to reduce the alcohol consumption in situations where drinking is normative. Attempts to cut down alcohol consumption are often destined to fail, because adolescents highly value their own autonomy (Collins, Gleason & Sesma, 1997), and interferences of adults to affect alcohol consumption are often not welcomed (see e.g. Whitehead & Russell (2004) on health resistance, which particularly appears in teenagers and young adults). Perhaps just offering alternative ways (such as e.g. providing games) to spend time in a public drinking place will not be immediately perceived by youngsters as a method to intrusively influence alcohol consumption, since the choice to become involved in these activities is up to the youngsters themselves. By spending more time actively, the adolescents’ total alcohol consumption may decrease because of the possible lower consumption rate during activities.
On the other hand, when involvement in activities would lead to longer lasting drinking sessions this method can be considered ineffective in decreasing total alcohol consumption. The same goes when offering certain games would lead to youngsters starting to play drinking games. Apart from offering relaxation, fun and positive social advantages, playing drinking games may lead to extreme intoxication, sexual manipulation and assault (Johnson, Hamilton & Sheets, 1999; Borsari, 2004). Younger students are especially at risk for these consequences, because among them drinking games are more prevalent (Borsari, 2004). Finally, when those who were active for some time compensate for the “lost” alcohol consumption by drinking at a higher rate when passive, it is useless to advise facilitation of activities in an attempt to reduce alcohol consumption. In other words, when those who have been active for some time have been drinking at a low rate, start drinking at an extra high rate after being active, the total consumption may be the same or even more than when no active pastime has been displayed.

In the current study we focus on drinking during a fixed amount of time and will not examine possible risks for extended drinking episodes and the onset of drinking games. We aim to answer the question whether engagement in active pastime leads to lower alcohol consumption. First we will examine whether some individuals will be more likely to be involved in certain activities than others. On the basis of questionnaire information about personality characteristics and regular alcohol consumption we try to predict the participation in and duration of active pastime in a time out situation in a bar. Secondly, we report alcohol consumption rates during different activities. This will enable us to test whether spending time more actively is associated with lower alcohol consumption during these activities. Thirdly, we test whether differences in alcohol consumption rate between activities will lead to lower total alcohol consumption, or whether more active individuals will manage to drink just as much as others, by drinking faster during other activities. In other words, whether they may catch up. Finally, some persons might be more likely to compensate for periods of inhibited drinking by consuming more when passive, while others might be less likely to compensate. We examine whether drinking to compensate might occur more often in individuals scoring higher on problem drinking tendencies. We assume that those individuals might be the ones more likely to experience inhibition of alcohol consumption as problematic. Therefore we decided to look at problem drinking scores as a possible moderator of compensatory behaviour during less active moments. Also, we executed analyses for the total group, and separately for males and females, because many processes concerning alcohol consumption are quite different for the sexes (see e.g. Suls, & Green, 2003).

Findings of an observational study on drinking in young adults in a bar lab setting will be discussed. In this study, we followed the ad-lib drinking of 238 individuals in 30 peer groups of 7 to 9 persons during 1h periods.
2. Method

2.1 Participants

Participants were 238 young adults who volunteered to participate (see Bot, Engels & Knibbe, 2005). They entered our laboratory setting as a group in a sense that one undergraduate student invited 6 to 8 friends to join this research project. A total of 30 peer groups enrolled. The majority of the groups (n = 27) consisted of 8 persons. A total of 128 men (54%) and 110 women (46%) participated, ranging in age from 18 to 28 years old. 203 participants (85%) had at least finished pre-university education, which indicates that this study involved participants with a relatively high educational level. 50 respondents (21%) indicated to live with their parents or other caretakers, whereas the others indicated to either live alone, or with a partner or friend. The constellation of the groups ranged from all men (7%) and all women (7%) to mixed gender (86%).

2.2 Procedure

The participants were invited to join a study on the effects of alcohol on group discussions and judgements. This story was in order to avoid that the participants’ attention was drawn to the actual aims of the study, i.e. examining alcohol consumption in an ad-lib drinking setting. This type of procedure is employed in many studies on modelling effects of alcohol consumption (see review by Quigley & Collins, 1999). The groups were invited to our bar lab for two sessions in one year; in this paper we only looked at the results of the first measurement. The sessions took place in a bar laboratory setting at our campus, all at weekdays in the beginning of the evening (usually from 7 PM) and lasted 2 hours. The bar lab was situated in a room furnished as an ordinary small pub, with a bar and stools, tables and chairs, and indoor games like table soccer and billiards, and a TV/video. During the sessions the radio played popular music. Volume and type of music were kept similar for all groups. Participants were told that we hired this bar from the faculty and that it was normally used for private parties and celebrations of staff members of the university.

First, after the participants had entered the bar lab, the procedure of the study was explained. Then, they were asked to fill in a questionnaire containing various questions about drinking patterns, expectancies, friendships, and types of relationship within the group. This took about 40 minutes. Next, they evaluated 10 persons for attractiveness and intelligence by pictures shown on the TV screen, after which they had 30 seconds for each picture to discuss within the group. This task was constructed to be undemanding, since answers were dependent on the participants’ own judgement. The aim of employing a task of this nature, was to prevent that the amount of alcohol consumed was dependent on some participants’ urges to do well on these tasks. During the completion of the questionnaire and the task non-alcoholic drinks were offered.

After completing this task, which needed about 10 minutes in total, they had a 50-55 minutes time out, in which they had to stay in the bar lab. They could play some of the available games, watch
TV, or have conversations. Participants were told that they could order a drink at the bar, and that the bartender would not offer them anything, because this would burden him unnecessarily, and it would be unethical for researchers to push the participants towards drinking. Soft alcoholic beverages (i.e. beer and wine) and non-alcoholic drinks were available and for free. It is essential to mention that soft alcoholic drinks are relatively cheap in the Netherlands. For example, in ordinary bars or restaurants the price of a 0.25 centilitre beer does not exceed 2.00 Euros. This implies that offering drinks for free does not encourage excess drinking for the majority of Dutch youngsters. Of course, if this study would have been conducted in cultures with a different drinking culture, offering drinks for free would probably lead to binge drinking in many of the participants. Nonetheless, still many students consumed a substantial number of drinks in this time out session. Nuts and chips were offered for free as well.

After the 50-55 minutes free time slot, a second task, similar (but with different pictures) to the first one was carried out. After 2 hours the participants went home by taxis. They received 30 euros per group for their participation.

During the 2 hours session video and audio recordings were conducted. Two cameras were used (one flexible with zoom and one steady), hidden in two corners of the bar lab. A research assistant operated the camera in an observation room adjacent to the bar lab. Participants were told in advance that they would be observed during the complete experiment and all gave written permission for the use of these data for our study. We stressed that they were not obliged to drink alcohol, because non-drinkers or light drinkers were also of interest for our study. Pilot studies were conducted to verify the credibility of the setting and procedure. Participants strongly endorsed the setting’s credibility and not one of the 32 participants in the pilot studies guessed the actual aim of the study. Participants were allowed to smoke during the session (if the other group members approved), because in the pilot studies we noticed that forcing smokers not to smoke while drinking strongly affects the feasibility of a normal drinking occasion for them.

The research proposal had been approved and granted by the Dutch Foundation for Scientific Research. The medical ethical committee (CCMO Arnhem-Nijmegen) approved of the protocols for our study. Debriefing of participants was done after the second assessment. After debriefing, participants were pointed at the possibility to withdraw their consent for using the observational data in our research.

2.3 Measures

2.3.1 Personality. A 30-item version (Vermulst & Gerris, 2005) of the Big Five Personality Questionnaire assessed the factors of the Big Five factor structure (Goldberg, 1990). The questionnaire consists of five scales, each consisting of six items on a seven-point scale (“does not apply at all” to “totally applies”). The scales measure agreeableness (α = .74), conscientiousness (α = .91), emotional stability (α = .82), extraversion (α = .88), and openness to experience (α = .70). Furthermore, we assessed sensation-seeking behaviour by a translation of a 13-item questionnaire, in which the
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respondent had to choose which of two statements applied most (α = .51) (Merrens & Brannigan, 1998).

2.3.2 Weekly alcohol consumption (self-reports). Weekly alcohol consumption was assessed by asking on which of the last seven days the respondent consumed alcohol, and if so, how many drinks were consumed. The summed-up total of the last seven days was used in the analyses (cf. Hajema & Knibbe, 1998).

2.3.3 Alcohol related problems (self-reports). A short version of the severity of problem drinking scale of Cornel, Knibbe, Van Zutphen and Drop (1994) was employed to assess the level of problems due to alcohol consumption. Factor analyses with LISREL 8 (Jöreskog & Sörbom, 1993) on a large data set of 6205 adults showed a clear one-factor solution for the total scale. A screening instrument of 6 items (Candel, 2001) matched satisfactorily with scores on the total scale consisting of 15 items (R² = .92). Examples of items are “Have you ever tried to quit drinking without being successful?” and “Did your partner or close relatives ever worry about your alcohol consumption, or complain about it?” Answers were on a dichotomous scale.

2.3.4 Pastime. Each individual’s activities were coded during the 50-55-minute time out. Activities were exhaustively and exclusively coded, i.e. at each point in time one and only one activity was coded. This way, each individual had behavioural codes for the total duration of the time out and relative measures for each activity could be calculated. The activities coded were: being alone, making phone calls, playing billiards, playing pinball, making conversation, playing cards, watching TV, playing table football, and visiting the toilet. Changing of activity codes was done as scarcely as possible. When for instance a person was playing table football and decided to order drinks from the bar and meanwhile had a short conversation with group members at the bar, this was still coded as playing table football and not conversation, if this person returned to the table football. Because of the possibility to watch recordings several times, accurate scores could be assigned. For the purpose of this paper we further constructed two categories of pastime. The first one was ‘Active’; consisting of the activities ‘playing pinball’, ‘playing cards’, and ‘playing table football’. ‘Playing billiards’ was not part of this category, because this game offers the players opportunities to compensate their drinking when it is the other players’ turn. In essence, playing billiard might be considered a combination of both active and passive pastime. ‘Making phone calls’ and ‘visiting the toilet’ can also be considered active or at least inhibiting alcohol consumption, but are not activities that people can easily be tempted to, as can be done in the case of offering games. This makes them irrelevant for prevention purposes. The second category of pastime was ‘Passive’, consisting of ‘being alone’, ‘conversation’ and ‘watching TV’.

2.3.5 Alcohol consumption rate (observational data). This was calculated by counting the number of drinks received during a certain activity divided by the total time the individual was involved in this activity. Since changing from one to another activity was possible after the drink had been received, it does not necessarily imply that the consumption of the total drink actually took place
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during this activity. Nevertheless, we consider this score a strong measure, moreover as coders were instructed to be scarce when it comes to changing scores for an activity. In the present study we used beer glasses that were smaller than standard glasses. In all sessions the same kind of glasses were used, and filled to the same level. The contents of beer glasses were on average 160 ml. The (lager) beer we used in our study contained 5% alcohol, which means that a glass of beer contained on average 8 ml pure alcohol. We divided the number of glasses consumed by 1.5 to reach the equivalent of 12ml pure alcohol for the count of beer consumed. This is in line with a Dutch standard glass. The contents of the (standard) wine glass in our study is 110 ml. The wines we offered contained from 11 to 12% alcohol, therefore a glass of wine contained from 12.1 to 13.2ml pure alcohol. Non-alcoholic drinks were not counted for this measure.

2.3.6 Total alcohol consumption (observational data). We counted the number of drinks consumed in the 50-55 minutes time out during the ad-lib drinking session. We applied the same weighing of beer and wine used for the calculation of the alcohol consumption rate. If participants did not finish their drinks at the end of the session, we subtracted the rest volume from the total consumption. Again, non-alcoholic drinks were not counted for this measure.

Several observers scored the activities and drinking behaviours of the participants, and scored an initial single measures intraclass correlation of 0.90 (average measures: 0.95). This relatively high level of agreement, together with an analysis of the recordings in which different codings appeared, and a discussion about the differences between the observers’ initial codings, led us to decide to allow single codings as observational measures.

2.4 Strategy for Analyses

Data from the questionnaires were entered in SPSS 12.0. The video and audio recordings were coded in The Observer 5.0 (Noldus Information Technology b.v., Wageningen). To give an impression on how the data have been coded, we included Figure 1, which depicts the course of activities and alcoholic drinks received by the participants in one particular group. The upper line of each participant shows the activities of this person, and the lower line shows the moments at which an alcoholic consumption was obtained.

Concerning the analyses of the observational data, we had to omit two groups; one because of technical problems, and another because the group members decided to do a drinking game during the time out session. In the latter group, individual drinking behaviour could of course not be predicted by possible explanatory variables such as the chosen activity. It should be stressed that none of the other 28 groups played drinking games.

We first reported the means and standard deviations of the occurrence of the various activities, and the means and standard deviations of the drinking rate during these activities. Further, we analysed whether personality characteristics and regular drinking patterns predicted if participants were more involved in certain activities, by using multiple regression analyses. Secondly we scrutinized whether the duration of involvement in active pastime was associated with faster drinking
during passive episodes. Because participants’ observed drinking levels are strongly dependent on the specific peer group they are in, (reflected in the intra-class correlation: \( r = .46, p < .001 \)), we used both the commonly applied multiple regressions and the less widespread multilevel analyses (MLwiN 2.02). In the latter, we tested both fixed and random effects. The fixed effects are the regression weights of the independent variables, and the random effects indicate the variance in the regression weights between groups. If a random effect is found, this means that a relation between an independent variable and a dependent variable varies between groups. Because large scale-differences between the measures led to illegible results (zeros in the table), we standardised the predictor variables in the multilevel analyses.

We tested, also by multiple regressions and multilevel analyses, whether the duration of active pastime was associated with total alcohol consumption in the observed hour. Finally, we examined possible interaction effects of the duration of active pastime with two variables, on both the drinking rate during passive pastime and the total alcohol consumption. The first is the interaction with the amount of alterations from active to passive pastime; the second is the interaction of the duration of active pastime with problem drinking tendencies.

### 3. Results

#### 3.1 Descriptives

Concerning self-reported alcohol consumption, almost all participants (99%) reported lifetime consumption of alcohol. Robust differences between men and women were apparent. Male participants reported a stronger engagement in 6+ drinking (\( M = 5.65 \) vs. \( M = 4.54, t (238) = 6.61, p < .001 \)), a higher weekly consumption (\( M = 21.76 \) vs. \( M = 10.39, t (238) = 6.11, p < .001 \)), to consume more drinks per hour (\( M = 4.25 \) vs. \( M = 2.53, t (238) = 5.91, p < .001 \)), and scored higher on the problem drinking scale (\( M = 7.51 \) vs. \( M = 6.77, t (238) = 4.77, p < .001 \)) than females. Also during the observed time out session males drank more than females (\( M = 3.31 \) vs. \( M = 2.02, t (221) = 7.42, p < .001 \)).

Table 1 shows the participants’ mean duration of the activities unfolded during the observed time out period. Males are more often alone and involved in playing billiards than females. Females are more often involved in playing pinball (the low mean duration is the result of the breaking down of the pinball machine early in the study; for reasons of consistence and completeness, we still report it here), conversation, and watching TV. When looking at the composite scores, it appears that men and women do not differ in the amount of time spent actively. Women do, however, spend more time passively than men. This appears to be the result of male involvement in billiards (neither in the active nor the passive category), where women are more involved in watching TV (passive).
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Table 1
Mean Duration (%) of Pastime in the Observed Time-out Period.

<table>
<thead>
<tr>
<th>Pastime</th>
<th>Total group</th>
<th>Males</th>
<th>Females</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Active</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cards</td>
<td>16.09 (28.85)</td>
<td>16.56 (29.23)</td>
<td>15.49 (28.49)</td>
<td>0.28</td>
</tr>
<tr>
<td>Pinball</td>
<td>0.81 (3.48)</td>
<td>0.33 (0.82)</td>
<td>1.42 (5.12)</td>
<td>-2.08*</td>
</tr>
<tr>
<td>Table Football</td>
<td>13.34 (17.45)</td>
<td>14.97 (19.06)</td>
<td>11.25 (14.98)</td>
<td>1.62</td>
</tr>
<tr>
<td><strong>Passive</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>1.13 (4.14)</td>
<td>1.64 (5.35)</td>
<td>0.49 (1.37)</td>
<td>2.31*</td>
</tr>
<tr>
<td>Conversation</td>
<td>38.72 (33.91)</td>
<td>34.20 (31.30)</td>
<td>44.51 (36.32)</td>
<td>-2.23*</td>
</tr>
<tr>
<td>TV</td>
<td>10.95 (27.19)</td>
<td>4.41 (17.48)</td>
<td>19.30 (34.31)</td>
<td>-3.90***</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Billiards</td>
<td>16.06 (24.51)</td>
<td>24.37 (28.75)</td>
<td>5.43 (10.71)</td>
<td>6.76***</td>
</tr>
<tr>
<td>Calling</td>
<td>0.44 (4.09)</td>
<td>0.71 (5.43)</td>
<td>0.08 (0.63)</td>
<td>1.28</td>
</tr>
<tr>
<td>Toilet</td>
<td>2.32 (4.96)</td>
<td>2.69 (6.17)</td>
<td>1.85 (2.69)</td>
<td>1.35</td>
</tr>
<tr>
<td>Active</td>
<td>30.24 (30.94)</td>
<td>31.86 (31.97)</td>
<td>28.17 (29.59)</td>
<td>0.88</td>
</tr>
<tr>
<td>Passive</td>
<td>50.81 (35.08)</td>
<td>40.25 (32.76)</td>
<td>64.30 (33.43)</td>
<td>-5.37***</td>
</tr>
</tbody>
</table>

Notes: Mean duration is based on all 221 participants; Standard deviations are between brackets; * p < .05, ** p < .01, *** p < .001. Symbols following “Paired Samples test” indicate differences in involvement in active and passive pastime within the gender groups.

Table 2
Average Alcohol Consumption Rate / Hour.

<table>
<thead>
<tr>
<th>Pastime</th>
<th>Total group</th>
<th>N</th>
<th>Males</th>
<th>N</th>
<th>Females</th>
<th>N</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Active</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cards</td>
<td>2.84 (3.93)</td>
<td>79</td>
<td>3.44 (4.71)</td>
<td>47</td>
<td>1.96 (2.15)</td>
<td>32</td>
<td>1.67</td>
</tr>
<tr>
<td>Pinball</td>
<td>5.66 (18.92)</td>
<td>50</td>
<td>5.59 (21.78)</td>
<td>32</td>
<td>5.79 (12.92)</td>
<td>18</td>
<td>-0.04</td>
</tr>
<tr>
<td>Table Football</td>
<td>3.54 (4.67)</td>
<td>136</td>
<td>3.96 (5.03)</td>
<td>82</td>
<td>2.91 (4.04)</td>
<td>54</td>
<td>1.28</td>
</tr>
<tr>
<td><strong>Passive</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alone</td>
<td>3.03 (9.43)</td>
<td>76</td>
<td>3.78 (10.16)</td>
<td>48</td>
<td>1.75 (8.03)</td>
<td>28</td>
<td>0.90</td>
</tr>
<tr>
<td>Conversation</td>
<td>4.45 (5.28)</td>
<td>221</td>
<td>5.75 (5.64)</td>
<td>124</td>
<td>142.78 (4.26)</td>
<td>97</td>
<td>4.47***</td>
</tr>
<tr>
<td>TV</td>
<td>2.98 (5.57)</td>
<td>40</td>
<td>6.01 (9.30)</td>
<td>12</td>
<td>1.68 (1.95)</td>
<td>28</td>
<td>1.60</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Billiards</td>
<td>3.40 (5.52)</td>
<td>128</td>
<td>3.82 (5.42)</td>
<td>91</td>
<td>2.38 (5.71)</td>
<td>37</td>
<td>1.34</td>
</tr>
<tr>
<td>Calling</td>
<td>1.52 (3.24)</td>
<td>10</td>
<td>1.90 (3.56)</td>
<td>8</td>
<td>0.00 (0.00)</td>
<td>2</td>
<td>0.72</td>
</tr>
<tr>
<td>Toilet</td>
<td>1.79 (5.99)</td>
<td>82</td>
<td>2.43 (6.09)</td>
<td>46</td>
<td>0.98 (5.85)</td>
<td>36</td>
<td>1.10</td>
</tr>
<tr>
<td>Active</td>
<td>3.23 (4.19)</td>
<td>173</td>
<td>3.40 (3.83)</td>
<td>104</td>
<td>104.29 (4.70)</td>
<td>69</td>
<td>0.65</td>
</tr>
<tr>
<td>Passive</td>
<td>4.33 (4.63)</td>
<td>221</td>
<td>5.54 (5.34)</td>
<td>124</td>
<td>124.79 (2.88)</td>
<td>97</td>
<td>4.89***</td>
</tr>
</tbody>
</table>

Notes: N Total group = 221; N Males = 124; N Females = 97. Mean drinking rate is the number of standard glasses consumed in one hour, calculated for participants involved in that specific behaviour, and weighed for the duration of that behaviour; Standard deviations are between brackets; * p < .05, ** p < .01, *** p < .001.

In Table 2, the mean drinking rates during the activities are displayed. Males drink significantly more alcohol during conversation than females. No other significant differences are found between the average drinking rates of males and females, even though this may be partly due to the high variances, since there seems to be a tendency of males to drink more over all activities. The high drinking rate during pinball games is the result of a few individuals who were trying to play pinball at the beginning.
of the free time slot, they received their first drink and subsequently found out that the machine had broken down, after which they chose another activity. The composite drinking rates show that men drink more than women when passive, but not when active. Males (and the total group) had higher drinking rates when they were passive compared with active, however, this difference was not found in females.

3.2 Personality and regular alcohol consumption predicting pastime

Because of the located gender differences in pastime, we tried to predict involvement in pastime controlling for gender. The Big Five personality dimensions and sensation-seeking behaviour were both unrelated to the involvement in any of the activities or the composite activity scores. Also self-reported weekly alcohol consumption and problem drinking showed no significant relation to any of the activities (not in Tables). This implies that we found no evidence for the assumption that certain people are more attracted to passive or active diversion in a bar. In other words, the heavy drinkers are not more involved in games, nor do they primarily spend time on a stool at the bar (alone or involved in conversation) to assure a sufficient alcohol intake in that hour, compared to light or non-drinkers.

3.3 Active pastime predicting alcohol consumption when passive

Table 3 shows that for both males and the total group a longer duration of active behaviour is associated with a faster drinking rate while passive (step 1 of the regression). This implies that persons who are more involved in active pastime compensate possible inhibition of drinking in active periods when they are passive. An alternatively explanation of this finding could be that the ones more involved in active pastime, are the ones who have been drinking more than others in the setting anyway. This explanation can be cancelled out, however, by the absence of a substantial correlation ($r = .04$; n.s.). We checked for moderating effects of the number of alterations from passive to active behaviours, but no significant interactions between the relative amount of active pastime and numbers of alterations were found (not in Tables). This indicates that the effect of drinking faster after having been active is not dependent on the number of switches from active to passive.

<table>
<thead>
<tr>
<th>Step</th>
<th>Total group</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>Total R²</td>
<td>Beta</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td>Relative Duration Active</td>
<td>.17*</td>
<td>.03*</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>Relative Duration Active</td>
<td>.16*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Problem Drinking</td>
<td>.29***</td>
<td>.12***</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>Relative Duration Active</td>
<td>.01</td>
<td>.03</td>
</tr>
<tr>
<td></td>
<td>Problem Drinking</td>
<td>.07</td>
<td>- .01</td>
</tr>
<tr>
<td></td>
<td>Duration Active x Problem Drink</td>
<td>.35**</td>
<td>.16**</td>
</tr>
</tbody>
</table>

Note. N Total group = 221; N Males = 124; N Females = 97. * p < .05; ** p < .01. We depicted the standardized estimates per subsequent step in the analyses.
Furthermore, we checked for interactions of problem drinking tendencies with active pastime on the alcohol consumption rate while passive. Both for the total group and males we first observed main effects of duration of active pastime and problem drinking on the drinking rate while passive (step 2 of the regression), which is reasonable taking in mind that problem drinkers simply drink more than those who are not problem drinkers, and this will also be the case during passive pastime. This main effect, however, was completely nullified by the interaction with the duration of active pastime (step 3). This implies that only (male) persons with a drinking problem tendency compensated for “lost” drinking during active pastime, and non-problem drinkers did not drink faster after an active period. In addition, problem drinkers only seem to drink more than others during passive pastime, when they have been active for some time. In the multilevel analyses (table 4), we found similar results, but only for the total group. For the males, the interaction of duration of active pastime with problem drinking did not reach significance (p < .10). We did find a main effect for the duration of active pastime on the passive drinking rate, but checking for random effects showed that this effect strongly varied between groups. This implies that in some groups being active may lead to faster drinking after being active, and this may not necessarily be dependent on problem drinking tendencies, but may be associated with group characteristics. For females, no effects were found from the duration of active pastime on the drinking rate while passive.

Table 4
Multilevel Analyses Predicting Drinking Rate While Passive.

<table>
<thead>
<tr>
<th></th>
<th>Total Group Values (SE)</th>
<th>Males Values (SE)</th>
<th>Females Values (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed Effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>4.46 (0.54)**</td>
<td>5.28 (0.68)**</td>
<td>2.95 (0.51)**</td>
</tr>
<tr>
<td>Relative Duration Active</td>
<td>0.46 (0.46) NS</td>
<td>1.11 (0.69)</td>
<td>-</td>
</tr>
<tr>
<td>Problem Drinking</td>
<td>0.10 (0.34) NS</td>
<td>-</td>
<td>0.33 (0.42) *</td>
</tr>
<tr>
<td>Duration Active x Problem Drink</td>
<td>1.06 (0.39) *</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Random Effects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>6.43 (2.21) *</td>
<td>7.94 (3.26) *</td>
<td>5.22 (1.80) *</td>
</tr>
<tr>
<td>Relative Duration Active</td>
<td>1.55 (1.11) *</td>
<td>5.43 (3.01) *</td>
<td>-</td>
</tr>
<tr>
<td>Problem Drinking</td>
<td>-</td>
<td>-</td>
<td>3.25 (1.20)*</td>
</tr>
<tr>
<td>cov Intercept – Duration Active</td>
<td>-</td>
<td>3.89 (2.38) *</td>
<td>-</td>
</tr>
<tr>
<td>cov Intercept – Problem Drinking</td>
<td>-</td>
<td>-</td>
<td>-4.21 (1.37) *</td>
</tr>
<tr>
<td><strong>Level 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>9.69 (1.03)**</td>
<td>9.98 (1.54)**</td>
<td>3.33 (0.59)**</td>
</tr>
<tr>
<td>Deviance</td>
<td>1187.68</td>
<td>689.63</td>
<td>440.01</td>
</tr>
<tr>
<td>Deviance Empty Model</td>
<td>1229.89</td>
<td>729.47</td>
<td>463.02</td>
</tr>
<tr>
<td>( \chi^2 ) (df)</td>
<td>42.21 (4)</td>
<td>39.84 (3)</td>
<td>23.01 (3)</td>
</tr>
</tbody>
</table>

Notes. N Total group = 221; N Males = 124; N Females = 97. * p < .05; ** p < .01. Insignificant values are omitted from the analyses in consecutive steps.
3.4 Active pastime predicting total alcohol consumption

We finally tested whether the relative amount of active pastime during the time-out led to higher or lower consumption over the total observed time. No significant predictors from the amount of active pastime were found on the total alcohol consumption for the total group, and for the males and females separately (ß’s all smaller than .03; N.S.) (not in Tables). This means that, even though the drinking rate is usually lower during active pastime, no inhibiting effects on the total alcohol consumption during a fixed time slot can be expected from the presence of games.1

4. Discussion

In the present study we explored the relations between pastime and alcohol consumption during a time-out situation. First, we found that personality characteristics and reported drinking (problems) did not relate to choices of pastime in a bar lab. However, sex did; males appeared to be more involved in active pastime. Furthermore, males appeared to drink more over situations, especially during conversation. We found that male participants who were more involved in active pastime drank faster during passive pastime, depending on the membership of certain groups and possibly depending on whether they had problem drinking tendencies. Involvement in activities was not found to be related to overall consumption during our study, not even for individuals who scored low on alcohol related problems. Even though on the surface it seems that activities inhibit drinking, we did not find any evidence in this study. If, despite our findings, offering opportunities to play is effective in preventing alcohol consumption, this will probably only be in non-problem drinkers. This may not be what prevention workers aim at, for problem drinking is quite prevalent among young adults, and concerns are highest for individuals with problem drinking tendencies. This could also be an explanation for the fact that initial drinking levels are unrelated to the selected activities; for those participants for whom drinking is quite important (e.g. problem drinkers), activities may not be a burden when it comes to reaching considerable consumption levels.

In order to give a more clear-cut answer to the question whether offering opportunities to play may inhibit drinking, it may be relevant to compare our findings with those of observational studies in places without opportunities to play, or to study problem and non-problem drinkers who are experimentally assigned to consumption inhibiting conditions. It can also be useful to study peer groups’ drinking behaviour for longer periods of time, like during a full night out. Aitken and Jahoda (1983), for example, found that time spent in a bar accounted for 49% of the variance in alcohol consumption, and it is unclear whether longer time intervals in a bar lead to other relations between active and passive pastime, or whether offering opportunities for active pastime may lead to longer

1 Because the classification of the activities is constructed on the basis of the authors’ judgements and open to discussion, we also ran the analyses in tables 3 and 4 with other possibly truthful classifications (putting playing billiards in the active category and leaving playing pinball out, because the pinball machine ran down quickly after the start of our study). Our results turned out to be quite robust.
drinking episodes. Another risk may be that offering games may trigger the onset of playing drinking games. As Borsari (2004), and Johnson, Hamilton, and Sheets (1999) argued, drinking games may lead to increased drinking and serious consequences related to drinking. Therefore, and on the basis of our findings, we conclude that no inhibiting effects from offering games can be expected.

It is remarkable that for females no differences were found between the drinking rates while active and passive. This may partly explain why no compensation was found for longer involvement in active pastime, in the form of higher drinking rates when passive. Apparently for young adult females within a peer group drinking has no priority; or else differences between active and passive drinking rates would have been found, together with compensation for “lost” drinking after periods of activity. Another possible explanation for these findings is that for females some activities, like conversation, may be considered more active than for males (Moira Plant, personal communication, 2005). In that case, females may be so much involved in the topics of their conversations that this will physically inhibit their drinking pace.

A strong feature of our study is that we were able to keep many variables stable. Where many observational studies have to deal with large differences in the situations compared, variables like group size, music volume, and time of the day were stable over the groups in our study. This makes it more likely that differences in drinking rates between active and passive pastime are the result of differences in activities, instead of the result of a third variable (like the effects of group size on alcohol consumption, as observed by e.g. Cutler and Storm, 1975). Another strong point is that individual differences on personality characteristics between participants had been assessed, and individual differences that would act as predictor of activities and alcohol consumption should have emerged in our analyses. This makes our study one with a clear focus on purely activities performed in a time-out situation.

Our findings seem to support the reliability and credibility of examining alcohol use in groups in a bar laboratory setting (see for an extensive discussion: Bot, Engels, and Knibbe, 2005). Although we aimed hard to create an atmosphere in which people would react as naturally as possible the question remains whether we succeeded. There are some indications that we did. Firstly, as mentioned, the cover up story worked quite well according to the pilot studies. In addition, but this is primarily based on personal impressions, the behavioural patterns exhibited in the 1-hour time-out session, were quite representative for normal behaviour in a pub or bar; for instance, people laughed, played games, sometimes had conversations about rather intimate matters, made passes at each other, or watched TV. Secondly, there is also statistical evidence for the credibility of the setting. It is possible to not find systematic overlap between what people normally drink and what people drank in this specific setting. If those who normally drink substantially when being out, would hardly drink in the bar lab setting, or vice versa, it would seriously conflict with the credibility of the setting. However, this was not the case. Young people who reported to drink excessively and frequently in everyday life were more likely to consume a high number of drinks in this 1-hour time-out session in the bar lab.
4.1 Limitations

A limitation of this study is that we chose to compose two measures of pastime that are arbitrary. As we discussed earlier, there may be differences between individuals in what may be considered passive pastime. For some people, being in a conversation may be quite strenuous, whereas for others it may be pure relaxation, which may have an impact on the alcohol consumption rate. Also the measure “Active” leaves room for discussion. “Making phone calls” and “Visiting the toilet” may be called active too, but are substantially different from the games we labelled “Active” in this study. Besides, they are not the kind of activities that can be manipulated, like can be done with playing by offering games, which makes them less practical when it comes to prevention of alcohol use. Further, we labelled “Playing billiards” as other, because it has both active and passive components, but the same argument may go for e.g. “Playing cards”. Running the analyses leaving “Playing cards” out of the “Active” measure and putting “Playing billiards” in showed no apparent changes in the results and confirmed that at least the finding stands that compensation takes place after slower drinking due to active pastime. Based on this study we must conclude that no decrease in alcohol consumption can be expected when playing opportunities are offered.

Other limitations have to do with the generalisibility of the findings. Although we assume that we succeeded in creating a time-out context in which young people react as naturally as possible, some constraints have to be mentioned. First, the drinks were for free. This might have triggered a larger tendency to compensate for lost drinking than would occur in normal situations in which drinks usually have to be paid for. Second, young people were only in the bar lab for approximately 1 hour. We do not know (a) whether people will choose different types or order of activities when they spend more time in a specific pub, or (b) whether compensation for ‘lost alcohol consumption’ because of involvement in activities such as playing table soccer would have been less substantial when people know in advance that they have plenty of time to do several activities. Finally, usually people are not in a pub or disco with merely their friends. We do not know the effects on drinking patterns and activities when more people are around.

All in all, we can state that differences in drinking rates have been observed between individuals who were involved in active and passive pastime, but we cannot conclude that involvement in play will lead to lower total alcohol consumption during a time-out situation. Our study however, is the only one in its kind and may not completely reflect what happens on a standard night out. Therefore we consider this study exploratory, until other studies replicate our finding that individuals are able to titrate their alcohol consumption. When it comes to identifying other possible tools to decrease alcohol consumption in young adult peer groups, perhaps other factors may be more promising. In an earlier study (Bot, Engels & Knibbe, 2005) we found that gender composition of the group makes a large difference in individual alcohol consumption, and in the present paper we found that e.g. membership of a certain group may make a difference in individual predictors of drinking. In the near future we will more closely look into our data, taking group composition and group member
characteristics into account. Perhaps studying peer group drinking behaviour in such a manner will lead to findings that are more useful for the prevention policy of excessive drinking in young adults.
5. References


alcohol portrayal on television affects actual drinking behaviour

Based on:
Abstract

In this experiment we tested whether portrayal of alcohol images in movies and commercials on television promotes actual drinking. In a naturalistic setting (a bar lab) young adult male pairs watched a movie clip with two commercial breaks for 1 hour and were allowed to drink non-alcohol and alcoholic beverages. These participants were randomly assigned to one of four conditions varying on type of movie (many versus few alcohol portrayals) and commercials (alcohol commercials present or not). Results indicated that participants assigned to the conditions with substantial alcohol exposure in either movies or commercials consume more alcohol than other participants. Further, participants had more sips directly after being exposed to alcohol in the movie, indicating imitative behaviour, that is, their own drinking was affected by the behaviour of the movie characters. This finding was particularly strong in the condition with high incidence of alcohol in the movie and commercials, which suggests an accumulation effect concerning exposure to alcohol on television.
CHAPTER 10 – alcohol portrayal on television

Introduction

Currently, there is an active debate on the ethics of, and, subsequently, the legislation on advertising of disputed commodities. For tobacco, of which use has straightforward detrimental health consequences, in many countries advertising has been prohibited, or at least minimalised. For alcohol, of which use (as opposed to misuse) is generally accepted in most Western countries, the picture is more complex. Many prevention workers and policy makers compete for a total prohibition of alcohol advertisement, whereas the alcohol producing industry claims to have taken up the responsibility to encourage and facilitate sensible drinking habits, e.g. by only aiming adverts at mature age groups (in the Netherlands). An important argument in this debate is whether or not alcohol portrayals and advertising have a causal effect on drinking behaviour.

Despite ample survey research on portrayal of alcohol in movies, soaps and commercials, and the potential link with alcohol preferences and drinking behaviours, little evidence has been found on actual effects of alcohol commercials on television or, broader, the overall exposure of alcohol on television (Baillie, 1996). A number of survey studies have reported associations between recall of alcohol in the media (Connolly, Casswell, Zhang & Silva, 1994) and outcomes like alcohol expectancies (Kotch, Coulter & Lipsitz, 1986; Kulick & Rosenberg, 2001; Winslow, 1998) or consumption (Ellickson, Collins, Hambarsoomians & McCaffrey, 2005; Stacy, Zogg, Unger & Dent, 2004), and argue that this can be interpreted as an effect of alcohol exposure in movies, television programmes and commercials on drinking behaviour of young people. In addition, substance use of leading characters in movies and soaps, as well as alcohol commercials on television, might contribute to the widespread social acceptance of substance use, and might foster initial and continued use in young people (see Aitken, Eadie, Leathar, McNeill & Scott, 1988; Distefan, Pierce & Gilpin, 2004; Ellickson, Collins, Hambarsoomians & McCaffrey, 2005; Engels et al., 2006; Grube, 1993; Robinson, Chen & Killen, 1998, Thomsen & Revke, 2006). Even though some of these studies show prospective associations between exposure to alcohol images (Connolly, Casswell, Zhang & Silva, 1994; Sargent, Wills, Stoolmiller, Gibson & Gibbons, 2006) or television and music video exposure in general (Van den Bulck & Beullens, 2005; Van den Bulck, Beullens & Mulder, 2006) and drinking, they are often multi-interpretable when it comes to causality and possible interfering variables.

As far as we know, no controlled, randomised experiment has been conducted to answer questions on the effect of exposure to alcohol on television on actual drinking. A reason for this lack of research may lie in the fact that influence from exposure to television images is expected to take place over a longer time, through changes in associations, cognitions and expectancies (Robinson, Chen & Killen, 1998), which hampers the possibility to conduct a thorough experiment. This expectation of the mechanism of influence may be accurate when it comes to persuading people in their considerations to buy long-lasting goods like, for example, cars or kitchen machines; we assume however that exposure to alcohol on television may lead to direct effects on consumption. This may be
the case, since drinking alcohol, just like eating snacks (Halford, Gillespie, Brown, Pontin & Dovey, 2004; Snoek, Van Strien, Janssens & Engels, 2006) or smoking cigarettes, often takes place while watching television. Even though the linkage between direct and long-term effects of exposure to alcohol on television may be modest, direct influence from television may illustrate the persuasive power of exposure to alcohol images, and moreover, direct consumption resulting from effects of alcohol exposure on television may be harmful in itself, when it leads to higher drinking levels.

In the current study, we first expect that both alcohol portrayal in movies and in commercials has an immediate effect on drinking, in such a way that more alcohol is consumed after exposure to alcohol in movies and commercials. Second, we expect that alcohol portrayal in movies does not only affect how much people drink overall, but we also test the assumption that people do take more sips directly after viewing alcohol in movies. Third, we hypothesise that alcohol in movies and commercials may interact; i.e. since movies usually attract more attention than the commercials in between, we expect commercials to indirectly affect the influence of alcohol during the programme or movie, in such a way that exposure to alcohol in commercials leads to a stronger effect from alcohol exposure in the movie on drinking. In other words, a continuous portrayal of alcohol through alcohol commercials during breaks in programmes might reinforce continuation of imitation.

Method

Participants
The sample consisted of 80 male students recruited at the university, ranging in age from 18 to 29 years old (M = 21.45, SD = 2.19). The males were recruited by handing out flyers and also by directly asking people to participate. They were asked to come with a male friend.

Design
All 40 couples were randomly assigned to one of the four different movie conditions, resulting in 20 males in each condition. The four movie conditions were: Alcoholic movie with neutral and alcohol commercials: AM/AC; Alcoholic movie with neutral commercials: AM/NC; Non alcoholic movie with neutral and alcohol commercials: NM/AC; and non alcoholic movie with neutral commercials: NM/NC.

Procedure
The couples were invited to the bar laboratory at the campus of the Radboud University Nijmegen for a one-and-a half hour session. Even though it was unnecessary for our research questions to invite couples, we did so to encourage the participants to feel free to drink alcohol while watching the movie, which would be less likely if participants would be alone. The study was presented as an examination of general TV viewing behavior in daily life and took place in the late afternoon. We used a naturalistic setting, to increase the ecological validity of the study and minimize demand characteristics (see Bot, Engels & Knibbe, 2005). The setting is a specially equipped relaxing
room at our lab, with a comfortable couch and a big TV screen, like a home cinema. Participants were told that staff members normally used this setting. We created a cozy corner in this room, just like a students room, with a leather couch, an easy chair and a small table with an ashtray and nuts or chips, situated in front of a large screen and a projector. A refrigerator with soft-alcoholic beverages (i.e. beer and wine) and soft-drinks (i.e. cola and orange soda) was within arm’s reach. The choice of the four different drinks arose from the assumption that these are the most popular drinks consumed by young Dutch people while watching a movie. It is essential to mention that soft-alcoholic drinks in the Netherlands are relatively cheap. This implies that offering drinks for free does not encourage excess drinking for the majority of Dutch youths. Afterwards, we asked the participants if they had an idea of the real aim of the study. They strongly endorsed the credibility of the setting because only 8 of them had more or less an idea of the aim of our study; the others did not even think alcohol was part of it. Not one of them guessed the real aim of the study.

First, each couple was randomly assigned to one of the four conditions. After the couple entered the bar laboratory, they were asked to sit in front of the large screen, where the procedure of the study was explained to them. They were told that they would see a movie clip interrupted by two commercial breaks and just had to act like they were relaxing at home. Further they were told that they could get free drinks out of the refrigerator and that they were allowed to smoke while watching the movie. Nuts or chips were offered for free as well. After the instructions the experimenter left the room to let the participants watch the movie clip.

The movie clip lasted approximately one hour. When the movie clip ended, participants were asked to fill in a questionnaire containing various questions about the movie, the commercials, drinking habits, type of relationship with the one with they watched the movie with and personality. This took approximately 30 minutes. After 1.5 hours, participants went home. They were offered a free taxi when they drank 3 bottles of beer or wine or more (0.2 litre). Participants received 9 euros for their participation.

The movies ‘American Pie 2’ (2001) and ‘40 Days and 40 Nights’ (2002) were selected because they were comparable concerning genre and MPAA-rating (The Motion Picture Association of America). This movie rating system is a voluntary system sponsored by the Motion Picture Association of America and the National Association of Theatre Owners to provide parents with advance information on films, enabling parents to make judgements on movies they may or may not want their offspring to see. ‘40 Days and 40 Nights’ is a comedy with an R-rating for strong sexual content, nudity and language, and was used in the ‘Non Alcoholic movie’ condition. ‘American Pie 2’ is a comedy with the same rating with the addition of crude humour and drinking content and was used in the ‘Alcoholic movie’ condition. The user ratings on IMDB.com (Internet Movie Database; an internet site visited by 38 million visitors each month) were 6.2 for ‘American Pie 2’, judged by 29,769 users, and 5.3 for ‘40 Days and 40 Nights’, judged by 11,901 users, on a scale from 1 ‘awful’ to 10. ‘excellent’.
In ‘American Pie 2’, characters drank alcohol 18 times and an additional 23 times alcoholic beverages were portrayed. In ‘40 Days and 40 Nights’ characters consumed alcohol 3 times and 15 times alcoholic beverages were portrayed. Alcohol portrayal in the movies were coded by two observers and correspondence in terms of Cohen’s kappa was high (> .90).

After 14 and after 33 minutes the movie clips were interrupted by a commercial break for 3.5 minutes, containing either exclusively neutral ads (e.g., promoting a car or a video camera) or neutral ads combined with alcohol ads. Each of the combined breaks contained two alcohol commercials; adding more alcohol commercials would be unrealistic. Please notice that in the Netherlands alcohol commercials are allowed in movie theatres as well as on national TV channels. The ads were selected carefully; we avoided humour and made sure the two commercial breaks did not differ in number of ads, length and diversity of the presented products.

During the hour the participants were watching the movie clip, video and audio recordings were conducted. One camera was used (flexible with a zoom), hidden in a corner of the bar laboratory. We operated the camera in an observation room next to the bar laboratory. We asked all participants to give written permission for making video and audio-recordings during the experiment and to allow us using them for research purposes.

Measures

Appreciation of the movie. Appreciation of the movie was measured with nine questions on a 5-point rating scale with responses ranging from 1, ‘completely disagree’ to 5, ‘completely agree’. Examples of items are ‘I liked the movie’ and ‘I appreciated the theme of the movie’ (Cronbach’s alpha = .88).

Familiarity with the movie. Participants were asked if they had seen the movie before.

Alcohol Consumption (self-reports). The questionnaire contained questions about participants’ alcohol use and they were asked to fill in how many drinks they normally drink in 1 hour while watching TV (see Bot et al., 2005). They had to provide answers for the number of alcoholic and non-alcoholic drinks. Further, heavy drinking was assessed by the frequency of 6+ drinking with responses ranging from 1, ‘never’ to 7, ‘more than twice a week’ (Engels, Knibbe & Drop, 1999). Also, frequency of drinking was assessed by asking about how often participants had drunk in the past 12 months. We finally asked to report which of the past 6 days (Tuesday to Sunday) they drank alcoholic beverages and how many. The summed-up total of the last seven days was the measure used in the analyses (cf. Hajema & Knibbe, 1998).

Alcohol Consumption (observational data). We counted the bottles of drinks consumed in the one hour movie-session. To assess the amount consumed by each participant, each recording was observed by two independently coding trained observers. The reliability was very high: correspondence in terms of number of consumptions, type of beverage, and number of sips was 100%. Agreement on timing of sibs and portrayal of alcohol in the movie was above 95%. Bottles of beer contained 200ml, bottles of wine and soft-drink contained 250ml. To assess the total amount of
alcohol consumed, we multiplied the counted number of bottles of wine consumed by 1.6, to attain an outcome relating to the amount of alcohol in 1 bottle of beer. Consumed soft drinks did not contribute to the total amount of alcohol consumed. If participants did not finish their drinks at the end of the session, we subtracted the estimated remaining volume from the total volume of the bottle.

*Sip rate (observational data)*. During the movie-session, we observed and coded the participants’ frequency of sips. A sip was defined as a discrete touch of the bottle or glass to the participants’ lips, combined with swallowing. For the sip rate, no distinction was made between beer, wine or soft drink.

*Imitation of the movie (observational data)*. We counted the number of sips consumed during the movie clip and also noted the exact time at which the participants took a sip. Afterwards we compared the moments of sipping with the moments alcohol was portrayed in the movie clips. We coded the clips for the participants’ possibility of imitation of ‘alcohol drinking’ in the displayed movie or the possibility of participants’ drinking while seeing ‘alcohol on screen’. In our study imitation of the movie is perceived as taking a sip in a range from 0 to 12 seconds after active drinking by a character or portrayal of alcohol on screen (besides active drinking), divided by the score the participant would receive for imitation on the basis of chance (i.e. the number of sips the participant took in total, divided by the proportion of time of the movie that could be considered for scoring on imitation). A score of 1 indicates that the participant scored an equal score on imitation as would be received on basis of chance.

*Strategy for Analysis*

First, we reported on the participants’ scores on alcohol consumption and appreciation of and familiarity with the movie. Then, we tested our first main hypothesis by executing an analysis of variance on differences in total alcohol consumption between conditions. We also tested differences between the conditions on total amount of sips taken, and the volume of sips taken. For the two latter analyses, only individuals who drank alcohol during our experiment were taken into consideration.

Then we tested our second main hypothesis by investigating whether people are not only affected by alcohol portrayal in the movie but also directly imitate behavior from main characters or start drinking after portrayal of alcohol in the movie. We therefore tested whether participants took more sips in the twelve seconds following immediately after the exposure of alcohol, as compared to the average probability of taking sips throughout the movie. We did this by executing paired samples t-tests for the participants’ imitation score in total and in each condition. Finally, we tested, also by paired samples t-tests, whether the alcohol commercials led to an indirect effect of drinking throughout the movie. Since we had the impression that most participants were not engaged in following the commercials, we tested whether alcohol commercials had an effect on imitation of the movie after the commercials were shown by reporting whether imitation of alcohol in the movie increased after alcohol commercials were shown.
CHAPTER 10 - alcohol portrayal on television

Results

Descriptives

The participants’ self-reported consumption was relatively high. Only one person reported no occasion in the last twelve months in which he consumed more than 6 glasses, whereas 36.3% reported to have heavy drinking occasions once or twice a week and 17.5% more than twice a week. The average weekly consumption was 21.05 ($SD = 15.12$) glasses. Even though the friendship pairs were randomly assigned to one of the experimental conditions, differences were found on initial drinking habits between the participants in the different conditions. The frequency of 6+ drinking did not differ significantly between the conditions, but last week’s alcohol consumption was higher in the AM/AC than in the NM/NC condition ($M = 31.2, SD = 17.1$ versus $M = 17.8, SD = 11.7$ consumptions; $t(38) = 2.9; p < .01$) (Footnote 1).

A total of 59 respondents (73.8%) indicated afterwards that they saw the displayed movie before. In terms of appreciation of the movie, ‘American Pie 2’ had a score of 3.52 ($SD = .65$) on a 5-point Likert scale ranging from 1 to 5, whereas ‘40 days and 40 nights’ has a score of 3.69 ($SD = .72$) ($t(78) = 1.05; p = .30$), indicating that differences in actual alcohol consumption can not be attributed to differences in movie appreciation. Drinking habits (in terms of self-reported heavy drinking) of the 59 participants who indicated to have seen the movie in their condition before, did not differ from that of participants who had not seen the movie ($M = 5.6, SD = 1.2$ vs. $M = 5.7, SD = 1.0$); $t(38) = -.15, ns$, for viewers of ‘American Pie 2’, and $M = 5.4, SD = 1.4$ vs. $5.07 SD = 1.0$; $t(38) = .72, ns$, for 40 Days and 40 Nights). During the current study, the participants drank an average of 2.05 ($SD = 1.42$) alcoholic consumptions.

Table 1
Corrected Means of Total amount of Alcohol Consumed in each Condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Alcohol Commercials</th>
<th>Non-alcohol Commercials</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SE)</td>
<td>M (SE)</td>
<td>M (SE)</td>
</tr>
<tr>
<td>Alcoholic Movie</td>
<td>2.98 (0.29)</td>
<td>1.86 (0.29)</td>
<td>2.38 (0.21)</td>
</tr>
<tr>
<td>Non-alcoholic Movie</td>
<td>1.95 (0.29)</td>
<td>1.51 (0.29)</td>
<td>1.73 (0.21)</td>
</tr>
<tr>
<td>Total</td>
<td>2.42 (0.21)</td>
<td>1.69 (0.21)</td>
<td>2.05 (0.16)</td>
</tr>
</tbody>
</table>

Note. N = 80; 20 participants in each condition.

Effect of Alcohol Portrayal on Total Consumption

Because differences existed in weekly drinking between conditions, we corrected for these differences by conducting an ANCOVA. This ANCOVA (Table 1) shows that both the portrayal of alcohol in the movie ($F = 4.44; p < .05$) and that in the commercials ($F = 4.93; p < .05$) affect alcohol consumption independently when corrected for the participant’s weekly alcohol consumption. Further
analyses did not show an interaction effect between commercials and movies on observed drinking (F = 1.57; p = ns).

Effect of Alcohol Portrayal on Direct Consumption

We tested whether the participants scored higher on imitation of ‘alcohol drinking’ or ‘alcohol on screen’ by sipping more often than would be expected in case of chance (Table 2). For the total group of participants we found an imitation effect. When analysing the separate conditions, we found that imitation of the alcohol exposure in the movie took place in the AM/AC and AM/NC conditions, but not in the NM/AC and NM/NC conditions. Thus, in conditions in which much alcohol was exposed in the movie, participants reacted by drinking more immediately after the exposure.

Table 2
Direct Imitation of Alcohol Portrayal on Screen

<table>
<thead>
<tr>
<th>Condition</th>
<th>N</th>
<th>TD</th>
<th>NIMP</th>
<th>PIMC</th>
<th>PAIM</th>
<th>Paired T</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 AM/AC</td>
<td>20</td>
<td>3563</td>
<td>41</td>
<td>.138</td>
<td>.223</td>
<td>-5.832***</td>
</tr>
<tr>
<td>2 AM/NC</td>
<td>20</td>
<td>3446</td>
<td>41</td>
<td>.143</td>
<td>.222</td>
<td>-4.252***</td>
</tr>
<tr>
<td>3 NM/AC</td>
<td>20</td>
<td>3662</td>
<td>18</td>
<td>.059</td>
<td>.068</td>
<td>-0.847</td>
</tr>
<tr>
<td>4 NM/NC</td>
<td>20</td>
<td>3547</td>
<td>18</td>
<td>.061</td>
<td>.083</td>
<td>-0.832</td>
</tr>
<tr>
<td>Total Group</td>
<td>80</td>
<td>3554</td>
<td>29.5</td>
<td>.100</td>
<td>.148</td>
<td>-5.483***</td>
</tr>
</tbody>
</table>

Notes. TD = total duration of the movie in seconds, NIMP = number of imitation possibilities, PIMC = proportion of imitation caused by chance, PAIM = proportion of actual imitation; *p < .05, **p < .01, ***p < .001

Table 3
Direct Imitation of Alcohol Portrayal on screen by Movie Part

<table>
<thead>
<tr>
<th>Condition</th>
<th>N</th>
<th>TD</th>
<th>NIMP</th>
<th>PIMC</th>
<th>PAIM</th>
<th>Paired T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before first commercial break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 AM/AC</td>
<td>20</td>
<td>615</td>
<td>14</td>
<td>.273</td>
<td>.237</td>
<td>0.732</td>
</tr>
<tr>
<td>2 AM/NC</td>
<td>20</td>
<td>615</td>
<td>14</td>
<td>.273</td>
<td>.205</td>
<td>1.984</td>
</tr>
<tr>
<td>3 NM/AC</td>
<td>20</td>
<td>586</td>
<td>3</td>
<td>.061</td>
<td>.022</td>
<td>3.148**</td>
</tr>
<tr>
<td>4 NM/NC</td>
<td>20</td>
<td>586</td>
<td>3</td>
<td>.061</td>
<td>.080</td>
<td>-0.387</td>
</tr>
<tr>
<td>Total Group</td>
<td>80</td>
<td>600.5</td>
<td>8.5</td>
<td>.170</td>
<td>.136</td>
<td>1.576</td>
</tr>
<tr>
<td>After first commercial break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 AM/AC</td>
<td>20</td>
<td>1538</td>
<td>13</td>
<td>.101</td>
<td>.230</td>
<td>-7.873***</td>
</tr>
<tr>
<td>2 AM/NC</td>
<td>20</td>
<td>1538</td>
<td>13</td>
<td>.101</td>
<td>.165</td>
<td>-2.258*</td>
</tr>
<tr>
<td>3 NM/AC</td>
<td>20</td>
<td>1574</td>
<td>5</td>
<td>.038</td>
<td>.141</td>
<td>-1.260</td>
</tr>
<tr>
<td>4 NM/NC</td>
<td>20</td>
<td>1574</td>
<td>5</td>
<td>.038</td>
<td>.034</td>
<td>0.265</td>
</tr>
<tr>
<td>Total Group</td>
<td>80</td>
<td>1556</td>
<td>9</td>
<td>.069</td>
<td>.142</td>
<td>-3.207**</td>
</tr>
<tr>
<td>After second commercial break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 AM/AC</td>
<td>20</td>
<td>983</td>
<td>14</td>
<td>.171</td>
<td>.350</td>
<td>-3.711***</td>
</tr>
<tr>
<td>2 AM/NC</td>
<td>20</td>
<td>983</td>
<td>14</td>
<td>.171</td>
<td>.224</td>
<td>-1.219</td>
</tr>
<tr>
<td>3 NM/AC</td>
<td>20</td>
<td>1079</td>
<td>10</td>
<td>.111</td>
<td>.203</td>
<td>-2.387*</td>
</tr>
<tr>
<td>4 NM/NC</td>
<td>20</td>
<td>1079</td>
<td>10</td>
<td>.111</td>
<td>.105</td>
<td>0.201</td>
</tr>
<tr>
<td>Total Group</td>
<td>80</td>
<td>1031</td>
<td>12</td>
<td>.140</td>
<td>.222</td>
<td>-3.738***</td>
</tr>
</tbody>
</table>

Notes. TD = total duration of the movie part in seconds, NIMP = number of imitation possibilities, PIMC = proportion of imitation caused by chance, PAIM = proportion of actual imitation; *p < .05, **p < .01, ***p < .001
In Table 3 we discriminated between three parts in the movie, i.e. the first part of the movie before the first commercials were shown; the second part of the movie after the first commercials were shown; and the third part of the movie after which two commercial breaks had taken place. The results indicate that before the commercial break, no imitation of the movie - in terms of sipping - took place (though a non-imitation effect was found for the NM/AC condition). After the first commercial break, the participants in the alcohol-movie conditions (with and without alcohol commercials) imitate alcohol exposure in the movie. After the second commercial break, only the participants in the conditions in which alcohol commercials were shown significantly imitated alcohol portrayal in the movie.

Discussion

In the current study we found that viewing a movie in which alcohol is portrayed leads to higher total alcohol consumption of young people during the movie. Further, we demonstrated that the exposure of alcohol in a movie, by showing images of alcohol or drinking of alcohol directly leads to a reaction, in terms of viewers sipping more after the exposure to alcohol than would be expected by the average drinking pace of the viewer. This effect seems to be strengthened by the exposure of alcohol commercials in between the movie parts.

Even though this study was conducted among a relatively small number of participants, results were straightforward and in line with the outcomes of several survey and qualitative studies on the associations between alcohol portrayal in the mass media and drinking levels of (mainly young) people. In contrast with many other studies, however, our study was experimental in nature and focused on actual drinking levels, rather than reported alcohol consumption. To our knowledge, this is the first study in which portrayal of alcohol on a television screen has been linked to immediate drinking behaviour.

One may wonder why many debates have taken place on this subject, without a fair amount of studies after actual effects on drinking from portrayal of alcohol being executed. We assume a reason may be that common sense and marketing science state that advertising primarily works by changing consumer attitudes toward a product or by increasing brand salience (e.g., Miller & Berry, 1998), before changes in behavioural patterns can occur. Moreover, to change attitudes, exposure to messages is thought to ideally occur several times. This may have lead researchers to assume effects from alcohol exposure on television can only be found in the long run and cannot be uncovered in an experimental study. The present study nevertheless clearly shows that also immediate drinking behaviour is influenced by alcohol portrayals on television, Given the fact that many people watching television at home are in the opportunity to drink, these direct effects may actually account for quite some overall consumption as an effect of alcohol on television.
Based on the recent literature on imitation, there may be several reasons why the observed effects have occurred. First, on a relative low level, seeing an action increases the chances of performing the same action (see e.g., Chartrand & Bargh, 1999; Dijksterhuis & Bargh, 2001; Iacoboni, 2003). This effect occurs regardless of whether it concerns a real-life interaction (e.g. Quigley & Collins, 1999) or a stimulus person on a TV-screen (e.g., Van Baaren, Holland, Kawakami & Van Knippenberg, 2004). When in real life, anticipation on others’ reactions may be among the causes of imitation. Since viewers are aware that they will not be evaluated by characters from a TV-screen, this imitation will take place independent from this anticipation. This adds to the evidence for the assumption that humans are wired to imitate. Furthermore, mimicry is increased when we observe people we like or find attractive (Bernieri, 1988). It is not unlikely that the characters in the movies are generally regarded as positive (see McIntosh et al., 1999), which should add to the low level priming effect of observing drinking behaviour. Future research could look at the moderating role of liking and identification/transportation (Dal Cin, Zanna & Fong, 2004) in imitating drinking behaviour from TV-characters.

The fact that commercials seem to strengthen the imitation effect, together with the fact that no imitation effect was found for the alcohol exposure in the movie low on alcohol content, suggests that the operation of the imitation effect depends on an accumulation of exposure to alcoholic images. Only if people are exposed to images of alcohol over and over, this may lead to higher alcohol consumption within the situation. This finding might be an indication that the fact that commercials work best after repetitive exposure may also be true for very short time spans.

Limitations

Some limitations of this study need to be discussed. It is unfortunate that in our experiment, in which participants were randomly assigned, differences in initial drinking were found between the participants in the various conditions. These differences may be due to the fact that participants’ reporting higher consumption levels were primed to overrate their weekly drinking by the condition they were in. If this is the case, the actual effect of the portrayal of alcohol may be even stronger. But still, equal reports on drinking habits between the participants’ in the conditions would have been more appealing in terms of straightforwardness of the results. In the future, it may be sensible to assess drinking habits in advance, if possible without triggering the participants to guess the aim of the study.

Also, in our design, we deliberately chose to invite young male pairs (often friends). We did this to ensure that participants felt free to have an alcoholic drink (for which we assumed a certain amount of company would be beneficial), which might have not been the case when they entered our laboratory setting alone. A problem with this choice, however, is that drinking of one participant was not independent of the other in the same pair. It might have been that a movie in which a lot of partying is involved triggers a social process between two participants that affects total drinking amounts. It is on the other hand unlikely that the presence of someone else would affect the finding
that individuals directly imitate movie images. Still, it is important to replicate our findings with individual participants (and women) in the future.

Conclusion

In conclusion, our study showed that the portrayal of alcohol and drinking characters in movies directly lead to more alcohol consumption in young adult male viewers when alcohol is available within the situation. This finding is particularly vigorous since it was shown that imitation of alcohol consumption especially takes place shortly after its portrayal. Implication of these findings may be that, if moderation of alcohol consumption in certain groups is strived for, it may be sensible to cut down on the portrayal of alcohol in programmes aimed at these groups, and the commercials shown in between. Another implication may be that in situations in which this is possible (e.g., cinemas), availability of alcohol should be reduced when movies and commercials contain alcohol portrayal and individuals in a group at risk for problematic drinking are present. All in all, it can be concluded that, for young adult males, the portrayal of alcohol on a television screen may lead to increased alcohol consumption.
Footnotes

1. It is also possible that participants exposed to alcohol on TV were biased to reporting higher initial drinking levels (in terms of weekly drinking).
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CHAPTER 11

conclusions and general discussion
The present thesis focused upon the predictors of young adult drinking in a social situation. The findings from its earlier chapters will be discussed by evaluating them in terms of the model proposed in the introduction. We first evaluate the situational predictors, then the interpersonal predictors, and finally the individual predictors. After this we summarise these findings and review the methods and studies we have conducted concerning their difficulties and limitations. We end by discussing some directions for future research.

**Situational Predictors of Drinking**

Not particularly much attention has been given to situational predictors of drinking in this thesis. To be more precisely, we did not pay attention in terms of concretely examining variations in situational characteristics. We aimed at trying to make sure the situation was similar for all participants, for as far as the observational studies are concerned. This has led to our assumption that at least the physical drinking situation can be considered equal for all participants. Only within the physical drinking situation, variances between groups and individuals occurred, e.g. because groups differed concerning gender distribution or because some individuals were involved in other activities during the drinking session. Not explicitly tested in any of the previous chapters, but still worth mentioning, is that most of the participants drank more consumptions in our observational study than they did during an average weekday. This might seem trivial and obvious, but we think it is not. Since participants were not obliged nor encouraged by the test leaders to drink alcohol in our setting, it can be concluded that merely inviting groups of young people at night to a place where alcohol is offered triggers drinking. An explanation for this observation is given in Sheeran et al. (2005), who found for students that when drinking habits have been established, simply activating a goal (in this case: socialising) related to the focal-behaviour (i.e. drinking) elicits that behaviour. This would imply that simply enabling a young adult peer group to relax for an hour in a place where alcohol is available would trigger drinking if the participants have established drinking habits. Other explanations for the fact that our participants drank considerable amounts overall can e.g. be found in the work of Van de Goor (1990), and are factors like the time of day, nature of the situation (bar-like with music being played), number of people present and gender distribution. In sum, if we follow the conclusion of Sheeran et al. (2005) this suggests that for many young people entrance in public drinking places is connected to a clear goal-behavior link (see also work of Aarts & Dijksterhuis, 2000, on automaticity in goal-directed behaviours for habitual behaviours).

The effect of gender distribution in the groups was an integrated part of the study on alcohol expectancies, presented in chapter 7. In this study it appeared that the gender distribution in the group was very decisive in determining individual drinking in groups, in such a way that the higher the proportion of males in a group, the more participants generally drank. This effect was independent from the participant’s gender and over and above the effect that can be expected from the fact that
males drink more than females whatsoever (e.g., Knibbe & Bloomfield, 2001). In other words, both males and females drink more when the group consists of mainly males. This finding is in line with studies of Senchak, Leonard & Greene (1998), Sykes, Rowley & Schaefer (1993), and Van de Goor (1990), and may be an indication that in groups of mainly males a process unfolds that accounts for higher consumption than can be expected on the basis of individual drinking habits. It may be that male tendencies exist to incite others’ drinking when groups are composed of many males. Bruun’s (1959) finding, however, that the fastest drinker in a group sets the pace may be responsible for this finding too. It can, by the way, be discussed whether this is a situational or interpersonal predictor, but since this effect is found independent from the relations within the group or its members’ drinking habits we chose to consider this a situational predictor. Interpersonal predictors involving gender were treated in chapter 7, and later in this chapter.

Another situational predictor identified in this thesis is the activities undertaken while in a social drinking situation. In chapter 9 we discussed the effects of involvement in certain activities during a drinking session on drinking rate. Since no effects of personality and initial drinking were found on the selection of activities, the effects of the selection of activities can be considered principally situational. Similar to findings in other studies (Van de Goor, 1990), we found that individuals involved in active pastime (e.g., playing table soccer) drank slower than those involved in passive pastime (e.g., watching TV). However, by following our (male) participants for the duration of several activities, we found that they were able to titrate their drinking by drinking faster after having been active. In the end, we found no evidence that activities have an effect on the total amount of alcohol consumed during a fixed amount of time, since no differences could be identified between the drinking of individuals spending differential time slots in active activities. Therefore from chapter 9 it may be concluded that the presence of opportunities to be active during drinking sessions may not be anticipated as a way to reduce drinking. It should be stated that this conclusion was drawn from people already in a drinking situation and only in the first hour. Whether these findings hold during the course of drinking sessions longer than an hour – for example over the course of a whole night - can not be determined on the basis of our data. Our findings do of course not imply that activities that may for example keep people away from drinking situations are not effective. Simply being employed (Khan, Murray & Barnes, 2002) or being involved in athletic activities (Peretti et al., 2003) are certainly related to less drinking and we assume that people involved in longer periods of sobriety will not be motivated to make up for “lost” drinking over longer periods of time. However, our data do not indicate that games in bars and pubs – as is sometimes raised as a means to lower juvenile drinking - will prevent heavy drinking in young people.

In Western societies people are confronted with many cues related to alcohol each day; not only when they enter public drinking places, parties or supermarkets, but also when they are simply at home. TV programmes, like soaps and talk shows, movies and of course commercial breaks are loaded with alcohol portrayals. Generally speaking, one can argue that this often creates a ‘wet’ situation
people do not chose for, like is the case when choosing to go out to pubs and discos. The magnitude of exposure to alcohol cues on TV primarily depends on how often one watches TV and at what time. We consider it relevant to examine whether this specific situational characteristic (exposure to alcohol on TV) is affecting young people’s drinking. In chapter 10 we studied whether the portrayal of alcohol and drinking on television lead to more drinking in people watching, as suggested in many studies (e.g., Baillie, 1996; Ellickson, Collins, Hambarsoomians & McCaffrey, 2005; Stacy, Zogg, Unger & Dent, 2004). In a 2x2- between-subjects experimental design, young adult male friendship pairs were randomly assigned to one of four conditions varying on type of movie (many versus few alcohol portrayals) and commercials (alcohol commercials present or not). It appeared that in the conditions in which more alcohol was portrayed, viewers drank more than in those conditions in which less alcohol was portrayed. Further, participants had more sips immediately after alcohol was portrayed in the movie, as compared to the individual’s average sip rate during the movie. Finally, the effect of taking more sips after alcohol was portrayed in the movie seemed to be reinforced in the case of alcohol ads in commercial breaks. The findings from this chapter indicate that people are possibly wired to imitate and hence start drinking as a reaction to images of alcohol and drinking they observe. Since no evaluation from the ones imitated from screen can be expected, it can be argued that this imitating will be at least partly automatic, rather than driven by social strategies to be liked by others for reasons of similarities in drinking behaviour.

The above described finding lead to the provisional conclusion that situational predictors, like gender distribution in a group and portrayal of alcohol in the media, but not participation in activities within a situation, may be very important in shaping individual drinking.

**Interpersonal Predictors of Drinking**

A main goal of this thesis was to identify interpersonal predictors of drinking within a drinking situation. We have made an effort to approach this topic from several angles. We will start to recapitulate distal interpersonal predictors, after which we will shift to more proximal predictors. In chapter 5, we studied whether parental behaviours predict drinking in young adults in a situation where the parents are not actually present. Most research on parental factors predicting drinking focus on (the uptake of) drinking among younger age groups (see work of Van der Vorst and colleagues, 2005, 2006ab). In the present thesis we wondered whether upbringing still made a difference in young adulthood. We consider this an important question, since the goals of parenting in relation to alcohol use go beyond preventing children from harmful behaviour as long as they are under the authority of their parents; ideally, parenting guides young people to become sensible adults, able to develop healthy drinking habits, also when parents are not around. Some studies have addressed the relation between upbringing and adult drinking (e.g. Barnes, Reifman, Farrell & Dintcheff, 2000; Engels, Vermulst, Dubas, Bot & Gerris, 2005), but no studies till this one looked into the relation between
actual observed drinking and upbringing. From our results it appeared that effects from parenting still exist on the drinking behaviour of young adults in peer groups. More parental support is related to less drinking (observed and reported). Further, father’s drinking was positively related to offspring drinking. This effect may be attributed to modelling father’s drinking, but may also be hereditary (e.g., Poelen et al., 2006, Stabenau, 1985), in such a way that parents and children have the same tendency to drink, or equal qualities in enjoying or disliking the effects of drinking alcohol. Also, a positive relation between alcohol-specific monitoring and young adult drinking was found, but this can possibly be attributed to the fact that young adults who drink a lot, trigger alcohol-specific parenting practices in their parents (Kerr & Stattin, 2000). Although effects of parental behaviours were not very large in magnitude, they demonstrate that even in situations where parents are absent, and during their offspring’s stage of life in which they are most likely to engage in binge drinking, good parenting may be successful in partly preventing drinking. It can be discussed whether current parenting (which was assessed in the present study) or past parenting (in childhood and adolescence) is most influential in preventing excessive drinking (Barnes, Reifman, Farrell & Dintcheff, 2000). There are some indications (Salemink, 2006) that in young adulthood especially parenting practices related to maintaining a positive relationship are related to less excessive drinking, while in adolescence more directive parenting practices seem to be preventive, but these results are preliminary.

Parental behaviours are more distal factors possibly affecting adolescent and young adult drinking as parents are normally not present in drinking settings. It is therefore essential to test whether social relations between group members within a given drinking situation are affecting individual differences in drinking levels. In chapter 4 we scrutinized whether a group member’s sociometric status was related to the amount of influence he or she exerted or received concerning drinking within a wet situation. Often influence processes over time are studied (see review by Petraitis, Flay & Miller, 1995), but the assumption tested in this chapter was that young adults influence each others’ drinking in a social drinking setting, and that an individual’s position in the group may make a difference when it comes to the amount of influence one exerts or receives. This question may be very relevant, since it is detected that people generally drink more in groups, as compared to when alone. This finding may be partly due to the situational fact that at times when people drink in groups, they may be in an occasion in which heavier drinking is more likely whatsoever, simply because they are involved in e.g. parties, celebrations or at nights during the weekend. However, another part of the explanation may lie in the occurrence of a process in which young people influence each others’ drinking by being a model or offering each other drinks. In this chapter we found evidence that an individual’s drinking in a group is shaped both by own drinking habits and by the drinking habits of others in the group. When predicting individual drinking by the actual observed drinking of the other members in a group, individual (habitual) drinking even became a non-significant predictor. It also appeared that in this prediction others’ observed drinking interacted with the target’s gender in predicting drinking: especially males are very sensitive for influence from
group members’ drinking. Females are more likely to stick to their own drinking habits. Sociometric status of the group members, however, did not make any difference in the amount of influence exerted or received. That is, people in a group who are e.g. more popular or dominant do not affect others’ drinking any more than other group members. Also, people scoring higher on aspects like e.g. conformism are not more likely than others to be influenced by the drinking or offers for drinks of other group members. In sum, influence takes place in drinking in groups, but this is independent of group members’ sociometric status.

In chapter 3, we examined whether best friend’s drinking is a better predictor of individual drinking than other group members’. In many studies best friends are suggested as a major influencing factor in the initiation and maintenance of young people’s drinking (see discussion on relative influence of friends: Jaccard, Blanton & Dodge, 2005). It is realistic to expect best friends to be decisive in shaping drinking, but in this study we hypothesised that, when in a drinking situation, the friend is not more important than any other group member in shaping the drinking of individuals. The results of this study indicated that after correcting for drinking of others in a peer group, the observed drinking of the best friend was no longer predictive of participant’s drinking. Surprisingly, reported weekly drinking of the best friend still was predictive for individual drinking in the bar lab. A plausible explanation for this finding exists. Since the individual’s own drinking habits were not corrected for in the analyses, this effect may reflect similarities between the best friend and the target person that existed in advance, either through selection of a best friend with similar drinking, or through influence within the friendship. This would indicate that friends may be influential concerning (development of) drinking over time, but not more influential than others within a certain context. It can be stated that it will merely be the fact that friends are bound to spend a lot of time together, that makes them important in shaping drinking, than the fact that friends have a special relationship.

The conclusion that friendships may be more important in predicting drinking over time than within a certain situation, makes this topic one that seems to be best studied longitudinally. In chapter 2 we made an attempt to do this, and simultaneously assessed the nature of the participants’ friendships. In contrast with the study just discussed, in this chapter we studied individuals in a younger age group, namely adolescents in the age of twelve to fourteen. We looked at both cross-sectional associations between and longitudinal predictions of drinking of the best friend and the target adolescent. It appeared that, cross-sectionally, predictions of adolescent drinking were best from their best friend when it concerned a reciprocal friendship and the friend was of lower sociometric status. When longitudinally predicting changes in drinking, however, it appeared that drinking by unilateral friends (i.e. those not considering the target as a friend) and those being higher in sociometric status, and especially ‘friends’ combining these friendship characteristics, were of most influence on adolescent drinking over time. This chapter shows that it may not be the special relationship that typical best friends have that determines the influence taking place, but that adopting drinking of others may be a strategy to become friends with people higher in status or with those not considering
the target as a friend (see also Aloise-Young, Graham & Hansen, 1994). Also, in existing friendships, the strategy may be to claim more status or become better friends with the one drinking more. Considering that apart from friends’ actual drinking, perceptions of friends’ drinking may be highly predictive of individual drinking, the finding that adolescents' peer rejection and aggression are associated with greater overestimations of friends’ behaviour (Prinstein & Wang, 2005), may imply that rejected individuals may be especially at risk for drinking a lot as a strategy in friendship formation.

**Individual Predictors of Drinking**

In theoretical models, individual predictors are assumed to be responsible for drinking for a large part and they consequently are an important part of this thesis. Almost always, however, we studied them taking the social drinking situation into consideration. Therefore, in the chapters described in this part, interpersonal predictors are addressed as well.

In chapter 8, gender differences in susceptibility to peer influences concerning drinking were studied. As already mentioned in many other studies (see for Dutch data on this age group; Poelen et al., 2005), and also in earlier parts of this discussion, males generally drink more than females. It is nevertheless unclear, whether the mechanisms shaping drinking are equal or differ between the sexes. It can be argued, namely, that these mechanisms may be similar, but lead to more drinking in males. An alternative explanation is that drinking levels differ because of differences in the predictors of drinking. In this chapter the value of both views were considered, by means of longitudinal survey and observational data. From the questionnaire data no strong indications appeared that peers exerted strong influence on individual drinking of 12-to-16-year-olds, neither for boys nor for girls. From the observational data it appeared that strong gender differences exist in the mechanisms by which drinking is originated in a social drinking context. Males were far more likely to be influenced by the drinking levels of other group members, whereas this did not apply so much to females. Further, alcohol expectancies related to enjoying a social drinking-bout (i.e. expectancies of social, enhancement, sexual arousal, and power outcomes) were predictive for both males and females. However, when it comes to predicting drinking with the group members’ average expectancies, a different picture emerged. Females seemed to have a tendency to quit drinking when the group scored a high average on sexual arousal expectancies. Males, however, seemed to drink more when this group average was high. We brought up the explanation that females may stop drinking because of efforts to maintain control over the situation when being with male peer group members who drink a lot and also think that alcohol leads to sexual arousal. For males these results would signify that group expectancies on sexual arousal would not make them refrain from drinking, or even that they may be a reason to drink more. In sum, women and men do not only differ in the extent to which they consume
alcohol, but are also differentially affected by peer drinking and the way they are affected by ‘reasons’ of others to consume alcohol.

In chapter 7 we tested whether various expectancies regarding the outcomes of drinking affect individual drinking in a social peer context. Although cross-sectional, longitudinal and experimental studies have dealt with the predictability of alcohol use by (explicit) outcome expectancies, the question whether expectancies predict actual drinking in a social context (bar setting with peers around) remained unanswered. Our findings clearly indicate that primarily positive expectancies (about the social and enhancing features of drinking, see Wiers, Van Woerden, Smulders & De Jong, 2002) affect drinking. Note that in terms of effect sizes, the impact of alcohol expectancies on actual drinking appears to be rather limited. The fact that negative expectations are not related to drinking levels is understandable, bearing in mind that drinking in this social setting, namely being with friends or acquaintances in a pub, is probably not driven by expected negative outcomes. Thus, this study provides support for the explanatory value of alcohol expectancies in actual drinking in a social setting (see Lee, Greely & Oei, 1999). In future studies it might be interesting to test under which social and situational conditions specific alcohol expectancies are linked to drinking, as theoretically evidence for the value of expectancies is provided when specific expectancies predict specific drinking behaviour in specific contexts. Furthermore, in the past years, increasing attention has been paid to more implicit expectancies or attitudes on alcohol (see Wiers & Stacy, 2006) tapping more automatic and unconscious associations with alcohol. It would be nice to test the predictive value of implicit as well as explicit alcohol-related cognitions on actual social drinking.

Since personality is a precursor of numerous behavioural outcomes in humans, its role in social drinking situations may also be meaningful. Previous research on the link between personality traits and alcohol use and abuse has provided mixed findings; especially with respect to alcoholism and problem drinking links with some personality traits, such as emotional stability and extraversion have been found whereas the link with (normal) alcohol use is not clear. In chapter 6 we therefore scrutinised whether personality had an effect on individual drinking, and susceptibility to influence from peer drinking. Personality traits (assessed in terms of the Big Five) were related to questionnaire measures of alcohol consumption. Extraversion, namely, is positively related to daily alcohol consumption, whereas low emotional stability is associated with alcohol related problems. However, personality was not directly related to social drinking as observed in our bar lab setting. Apparently, in a social drinking situation, many factors play a role in the shaping of individual group members’ drinking, some of which are stronger than individual personality characteristics. Through susceptibility to peer pressure, however, personality did play a role in shaping drinking. Individuals scoring high on agreeableness were more likely to adapt their drinking to that of other group members. This suggests that concerning social drinking it might be more worthwhile to look for moderating effects of personality (in relation to social and situational characteristics) rather than main effects.
CHAPTER 11 - conclusions and general discussion

Provisional Conclusion on the Basis of the Studies in this Thesis

On the basis of findings from this thesis, we have to conclude that situational, as well as interpersonal and individual predictors determine the alcohol consumption of young people. The overall picture showed that situational predictors are important (see also Senchak, Leonard & Greene; 1998), though they are also the ones that may be chosen by young people themselves. Those who do not want to be tempted by peers or individual tendencies to drink much, may prevent this by avoiding situations that trigger drinking or in which drinking peers are around. Of course it is more difficult to escape from one’s individual tendencies to drink more, certainly because these often also affect intentions to keep drinking alcohol to a moderate level. Interpersonal predictors seem to be very important when it comes to explaining occasional drinking. It looks as if in taking up drinking and developing drinking habits, those with who we have a meaningful relationship, like a parent-child relation or friendship, or those who we would like to be friends with, are important. Within drinking situations however, it is those that are present that partially determine drinking, rather than our specific relationship with the ones present. Just being together in the situation may, especially for males, be enough to adapt drinking to levels that differ from own drinking habits.

Individual predictors continue to play a role in shaping individual drinking, above situational and interpersonal sources of influence. Factors like gender, or alcohol expectancies, seem to be firm in determining drinking, even if strong persuasion occurs resulting from the situation or peers. The three groups of predictors proposed in this thesis seem to all be important concerning drinking in young people and interact in many complex ways to eventually lead to actual drinking, as observed in our studies. It would be elegant to come to a conclusion on the relative impact of each of the types of predictors in this part of the thesis. This is, however, not viable from our findings, since apart from the fact that many moderators may have an impact on the role of these predictors, the types of predictors may ultimately have an impact on each other. Upbringing, for example, may lead to certain alcohol expectancies (Kateman, 2006), or resistance to peer influence (Salemink, 2006), and e.g. personality may facilitate tendencies to visit pubs, where interpersonal factors may do further work on shaping drinking in a specific situation. Another example; the drinking situation may determine the magnitude of peer influence that can be expected or tolerated.

This study was an attempt to look at various predictors of drinking, while at the same time aiming to control for factors that would probably be very influential when executing observations in a natural, instead of a naturalistic, setting. Where questionnaire studies may uncover numerous factors affecting drinking, it may be hard to accurately assess causal chains or processes leading to actual drinking behaviour. Studying drinking in a natural setting may be illustrative for researchers to learn how processes may take place, but may suffer from an overload of predictors impossible to assess and quantify. We therefore strongly recommend executing studies similar to this one in the future, combining questionnaires with naturalistic observations, to gain further insight into the factors that
make that many young people drink a lot, and often more than can be considered healthy. Experimental observational designs in which specific social or situational characteristics are manipulated are relevant in providing further evidence about the processes underlying binge drinking in social settings.

Monkey See Monkey Do

The picture that arises from our findings is that once people are in a drinking context, processes of imitation strongly play a role, and these processes unfold rather independently of specific social relationships people have with others in the peer group or the social status they have in the group. In particular for men, this pattern is quite consistent, and also exemplified with personal observations from watching the videos. A nice example is the case in which within a group of 8 people, two men are sitting at the bar and drink simultaneously: not only do they consume identical number of beverages, they also have a similar sip rate. In other words, synchronicity in drinking habits unfolds over the course of the break. This is e.g. also found in an observational experimental study on imitation and smoking (Harakeh, Engels, Van Baaren & Scholte, 2006), in which confederates varied in number of cigarettes smoked and results showed that many participants mimicked the smoking behaviour of the others without being consciously aware of this. In addition, experimental studies on social modelling and alcohol use reported similar patterns: using taste-test designs people strongly imitated drinking (in terms number of drinks and sip rate) of confederates (Caudill & Kong, 2001; Quigley & Collins, 1999). It is also fascinating that in our study young men who were exposed to drinking characters in movies also seem to imitate these behaviours. This suggests that in some cases the social rewards of imitating others are not truly relevant, and underscores the fact that in many circumstances alcohol cues automatically lead to imitation, and that this might occur more easily in habitual drinkers.

On the other hand, the strong link between peer and individual drinking in men may have also caused that in some groups men hardly drank alcohol, even when they are habitual (heavy) drinkers. In these cases apparently the alcohol cues in the bar lab which are related to approach tendencies in heavy drinkers did not automatically result in high drinking levels. Perhaps in some groups heavy drinkers instigate the process of drinking by ordering for themselves and others in high frequency, and from that moment on people start to imitate each other in terms of drinking, while in others drinking levels will remain low when for example mainly light drinkers are present, and heavy drinkers decide to adapt their drinking. In general, however, drinking was more likely to shift to a higher than to a lower consumption. An alternative explanation for this shift to drinking more may come from old studies of e.g. Jellison and Riskind (1970), who found that risk-taking is often interpreted as an indication of abilities and therefore may, by means of social comparison processes, be a cause of risky-shifts in groups. Their studies mainly focus on processes like decision making, but analogous to
CHAPTER 11 – conclusions and general discussion

this mechanism it is possible that group members communicate their ability to function normally after having consumed high amounts of alcohol to other group members. When, as postulated by social comparison theory, people want to be higher in ability than comparison others, this may lead to serious binge drinking.

Limitations of our Studies and Possibilities and Suggestions for Future Studies

In this thesis, various methods were used to answer research questions. The ‘PPS’-data were quite conventional, for as far as data collection was concerned. The fact that it was a longitudinal study, guaranteed an excellent opportunity for testing predictors of changes in drinking, and the role of participants’ friends in this process. The other two research methods used in large parts of this thesis, i.e. ‘Real Life in the Pub’ and ‘Alcohol and Media’, were less conventional since it concerned observations of drinking in a bar lab. Systematic observations of drinking in existing social groups have rarely been conducted. One of the few exceptions is the seminal work of Kettig Bruun (1959) who observed drinking habits in existing groups and for instance, examined the role of group cohesion and social interaction in alcohol consumption of adults. To our knowledge, no such naturalistic observational studies on peer influences have been conducted with adolescents and young adults. Our studies aim to address this gap. In this section we discuss the position of our studies in the field of alcohol research.

Earlier in this discussion we concluded that from our observational method, just like from more conventional studies, it appeared that a correct assessment of the causes of individual drinking should result from studying situational, as well as interpersonal and individual predictors. The majority of research on the predictors of drinking have applied questionnaire or experimental designs to disentangle these predictors, and it can be questioned whether these methods are fully adequate to study these predictors, either separately or taken together. An examination of our findings learns that in the prediction of drinking, often many moderators can be identified, and it is unlikely that these will be correctly assessed only by means of questionnaire or experiment. It may be too optimistic to think this will be entirely possible by using our observational method, but we want to point at a strong feature, namely that the reality we studied is not less complex than that in other drinking situations (and also quite realistic). Merely some degrees of freedom have been fixed by the researchers which makes the systematic observations just do-able. Future studies may use this technique in other ways, for example by observing one, unchanging, group’s drinking in different situations, like bars, discos, night clubs or at home.

Another strong point in this study is that we looked at influence processes in existing peer groups, rather than studying influence by observing the impact of a confederate model. This method of studying influence, together with the fact that it was done in rather large groups, as compared to dyads may be more difficult, but reflects reality much better.
Also, by fixing the kind of glasses our participants drank from, we know exactly how much alcohol they contained. In survey studies, in which participants are asked how many glasses they drank over a certain amount of time, variations may occur from differences in type of glass and drinks used by individual participants (Kerr, Greenfield, Tujague & Brown, 2005). These variations did not occur in our study, which made assessments of alcohol consumption more reliable.

In various chapters we have discussed that – in our opinion – we created a context during the sessions in the bar lab in a way that social and drinking behaviours are similar to those taking place in a normal pub. A point of critique may be that drinking in our setting was for free. We are aware of the fact that when going out in real life money may be an argument to stop drinking, or may be an aspect that counts in the way rounds of drinks are ordered. However, many drinking in young people takes place in situations in which the drinks do not have to be paid for (like private parties, or drinking at friend’s homes). When drinks have to be paid for, in the Netherlands they are relatively cheap (no more than 2 euros for a standard drink). We consider it illustrative that in the Netherlands, a group that can be considered relatively without means, namely students, drink more than people the same age who are not in college (Maalsté, 2000). We certainly realise that part of the increase in drinking problems in some countries may be related to the overall gain in prosperity, and can therefore be considered a problem resulting from wealth. For the scope of this thesis, however, this makes studying drinking without making people pay for drinks a valid method. We namely assume that in countries in which the overall prosperity is quite high, like the Netherlands, money will not be a big issue in the decision to start and remain drinking.

Sometimes people argue that in the bar lab people act differently as they know they are in an ‘artificial’ setting; so a bar lab in a university building, and are aware that they are being observed. Our experience and those of the participants themselves (we interviewed many in our pilot studies) is that after people are in the bar for some time, they simply ‘forget’ that they are in a lab. Although some are indeed still aware of the fact that cameras are apparent, this is really a minority. In line with a study of Wiemann (1981), who found support for the fact that “behaviours [that are] usually out of conscious awareness are not affected by observation procedures”, we assume no large effects on the behaviours of interest have taken place, since the participants supposed we were mainly interested in their judgements concerning videos on TV. This also implies it is not problematic that we did not hide our cameras from the participants.

Another limitation in our study was that relatively short (drinking) sessions were observed. Young people going out are usually involved in longer periods in which alcohol is consumed. This may lead to processes we were unable to observe using our method. It is even possible that, knowing that the drinking session only lasted for less than an hour, participants actually drank faster anticipating at the end of the session. Also, some people may have a tendency to stop drinking after some time, or after a certain amount of drinks, while drinking fast in the start of drinking sessions, while others may accelerate concerning drinking. With our method, such processes were unlikely to be
found. Therefore, in future studies, longer drinking sessions may be organised. In addition, to test whether people are stable in their social and drinking patterns it would be interesting to conduct longitudinal research in which peer groups come back to the bar lab multiple times. This would also be a way to test assumptions regarding predictors of selection processes in peer groups.

Within a session, several influence processes are taking place, and in various subgroups. In our setting with peer groups of approximately 8 people, mostly several subgroups formed, and these also change in constellation over the course of the session. To test (verbal as well as non-verbal) influence processes on a micro level in real time requires complex analytic approaches to deal with the data and are a future challenge. Pilot work in this area has been done by Van de Beek (2006), who showed that participants spent more time in the setting with others who have similar drinking habits, and above that, those spending more time together became even more similar concerning drinking within our setting. It might also be interesting to see whether methods to analyse dyadic data (see Granic & Hollenstein, 2003) can be employed to look at interactions within groups.

We conducted our observational studies with samples of college and university students. Although this target group is interesting as they show very high levels of alcohol use and problem drinking, it would be fascinating to conduct systematic observations in peer groups of adolescents. In particular among 14-17-year olds, there is a substantial increase in alcohol use which mainly is concentrated in peer settings (parties, pubs, discos, shelters). The social influence processes in this age group would be interesting – also from a prevention perspective – to focus on. However, it is ethically problematic to place underage people in a research situation in which they are allowed to drink.

In the future, observational studies on social drinking may also be directed at studying developments in the strength of the predictors of drinking after some alcohol-intake has taken place. Many, mainly bio-medically oriented studies have been done on the effects of alcohol consumption on human functioning. These studies usually focus on the impact of alcohol consumption on basic neuropsychological functions (e.g., Wiers et al., 2006). We are aware of studies in which the impact of alcohol is combined with individual factors (e.g., Giancola, 2003), but do not know of studies in which the impact of alcohol has been an aspect in studies of interpersonal and situational factors relating to alcohol consumption. To give some examples; individuals strongly under the influence of alcohol may be more likely to be influenced by others to keep on drinking than they would when they were still relatively sober. In other words, variations in blood alcohol levels might also affect susceptibility to peer pressure as inhibitory control decreases with increasing drinking levels. The same goes for situational aspects. Being tipsy may trigger more drinking in certain contexts (e.g., night clubs), whereas this may not be the case when entering sober. Sensibility to alcohol cues may therefore be affected by alcohol levels.

It is quite clear that constraints exist on the paradigm we used to study drinking patterns in peer groups in the bar lab, like the issue of free drinks, duration of the session, or the fact that the bar is at the university campus, but most important is probably that no other groups of people were
around. Normally people go out to public drinking places and often meet and interact with other
people. We did not study this in the bar lab. Although it is ethically and logistically very tough to
develop, it would be a nice endeavour to explore whether we can test our assumptions in a real bar for
a longer period of time, but still being able to conduct systematic – and in some way controlled –
observations.

All in all, we hope that we have shown that research combining questionnaire data with data
from naturalistic or natural drinking sessions may shed a clearer light on the predictors of drinking and
alcohol-related problems among young people, than exclusively conducting survey (or experimental)
studies. Structured observations of drinking behaviour in social groups are essential to gather insight
into social influence processes. Eventually, this knowledge may be helpful to develop or adjust
prevention and intervention programs aiming at sensible drinking or decrease of negative
consequences of drinking.
CHAPTER 11 - conclusions and general discussion

References


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CHAPTER 11 - conclusions and general discussion
SAMENVATTING

(summary in dutch)
SAMENVATTING (summary in dutch)

Alcoholgebruik is voor jonge mensen voornamelijk sociaal gedrag. Op jonge leeftijd is sterke lichamelijke afhankelijkheid van drank vaak nog niet aan de orde, maar overmatig alcoholgebruik hangt wel direct samen met bijvoorbeeld agressie, vandalisme en verkeersongevallen. Bovendien vergroot overmatig alcoholgebruik op jonge leeftijd de kans om later afhankelijk te worden van alcohol en allerlei alcoholgerelateerde problemen te ervaren.

Ondanks de gevaren die alcoholgebruik met zich meebrengt drinkt een groot gedeelte van de bevolking regelmatig. Vaak wordt voor het eerst gedronken in de adolescentie. De eerste drankjes worden vaak bij de ouders thuis gedronken en soms met leeftijdgenoten. Gedurende de adolescentie zal over het algemeen steeds vaker in gezelschap van leeftijdgenoten worden gedronken. Hieraan kan ten grondslag liggen dat meedrinken bij jongeren als overgangsritueel naar de volwassenheid wordt beschouwd (erbij horen) en dat alcoholgebruik sociaal gedrag kan faciliteren, oftewel het wordt vaak gezelliger met een drankje erbij. Drinken in een niet-sociale context is bij jonge personen minder gebruikelijk.

Omdat alcoholgebruik bij jongeren een sociaal gebeuren is, is het aannemelijk dat de sociale omgeving een belangrijke factor is in het bepalen hoeveel er gedronken wordt. Er zijn dan ook vele onderzoeken die er op wijzen dat, behalve bijvoorbeeld genetische aanleg, cultuur en opvoeding, de directe sociale omgeving een belangrijke rol speelt in het bepalen van individueel drinkgedrag.

Vanwege de sociale invloed en het gezelschap waarin jonge mensen gewoonlijk drinken, is het belangrijk inzicht te verkrijgen in de processen die bepalen hoeveel iemand drinkt in de aanwezigheid van leeftijdgenoten. Er zijn tot op heden vele studies geweest waarin sociaal drinkgedrag in kaart is gebracht; sommige observationeel van aard, andere met behulp van vragenlijsten. In de observationele studies wordt er vooral gekeken hoe drinkgedrag in een sociale situatie zoals een bar of disco plaatsvindt; verklarende variabelen zijn dan onder andere het type drinkgelegenheid, volume van de muziek en sekseverdeling van de aanwezigen. Vragenlijststudies negeren veelal de situatie, maar geven in tegenstelling tot observationele studies wel inzicht in de individuele voorspellers van drinkgedrag. Ze geven antwoord op vragen naar de invloed van bijvoorbeeld opvoeding, persoonlijkheid, welbevinden en vriendschappen op drinkgedrag. Beide typen onderzoek hebben sterke en zwakke kanten. Zo geven de meeste observationele studies geen inzicht in waar verschillen in individueel drinkgedrag vandaan kunnen komen, terwijl met behulp van vragenlijstonderzoek vaak weinig gezegd kan worden over situatieafhankelijkheid van gedrag en gedrag in complexe sociale omstandigheden. Het pogen de sterktes van beide typen onderzoek samen te voegen is het vertrekpunt voor dit proefschrift.

Dit proefschrift is één van de eerste studies waarin drinkgedrag in groepen jongvolwassenen systematisch geobserveerd wordt en bovendien gecombineerd met informatie over de individuele groepsleden. Omdat als doel gesteld was een zo realistisch mogelijke drinksituatie na te bootsen zonder de te analyseren situatie te vertroebelen door niet-beheersbare variabelen vonden de observaties plaats in een als kroeg ingerichte laboratoriumruimte van de Radboud Universiteit.
Nijmegen, het zogenaamde barlab. In dit barlab waren twee camera’s en microfoons geplaatst; de door deze apparatuur geleverde informatie werd opgenomen en geanalyseerd in een naastgelegen ruimte. De deelnemers aan onze studie waren vriendengroepen van rond de acht mensen. Om te voorkomen dat men zich te zeer bewust was van het feit dat het drinkgedrag geobserveerd werd, wat de spontaniteit hiervan zou kunnen beïnvloeden, werden ze ervan afgeleid door voorafgaand en na afloop van de (één uur durende) “pauze” waarin alcohol gedronken mocht worden een taak uit te laten voeren. Deze taak bestond uit het beoordelen en groepsgewijs bediscussiëren van afbeeldingen van personen die op een tv-scherm verschenen op een aantal aspecten, zoals aantrekkelijkheid en intelligentie. Het doel hiervan was de deelnemers de indruk te geven dat ze met name voor dit gedeelte aan de studie mee moesten doen. Doordat de afbeeldingen door de gehele groep beoordeeld moesten worden, was het voor de deelnemers verklarbaar dat ze in een groep en niet individueel langs moesten komen en zodoende geen reden voor achterdocht over het doel van de studie. Het feit dat deelnemers om oordelen werd gevraagd en ze niet lastig werden gevallen met zwaardere taken had als doel het drinken in een ontspannen sfeer te laten plaatsvinden, waarin door deelnemers niet geanticipeerd werd op een ingewikkeld tweede deel van de taak. Overigens werd de deelnemers wel verteld dat de gehele duur van de sessie onderdeel van de studie was en de beelden opgenomen werden, maar de opzet zorgde ons inziens voor een voldoende mate van ontspanning en ongedwongen gedrag tijdens het drinkgedeelte.

De bevindingen uit de observaties van deze studie, samen met gegevens uit een (vragenlijst)onderzoek en een experiment naar de invloed van alcohol in film en reclame op drinkgedrag zijn in dit proefschrift ondergebracht in hoofdstukken, waarin telkens een deelvraag wordt behandeld. De inhoud van deze hoofdstukken wordt hieronder bondig besproken. Nadere details over de beantwoording van de deelvragen kunnen in de hoofdstukken in kwestie in het Engels worden nagelezen.

In hoofdstuk 2 wordt allereerst met een vragenlijststudie bekeken of vrienden van jonge adolescenten (12 tot 14 jaar) een invloed hebben op individueel drinkgedrag over de tijd. Er bleek dat, hoewel jongeren in hun drinkgedrag het meest lijken op hun wederkerige vrienden met een gelijke status, zij over een periode van een jaar het meest beïnvloed werden door niet-wederkerige vrienden met een hogere status, mogelijk met als doel om door imitatie bevriend te raken met deze anderen.

Vanaf hoofdstuk 3 tot en met 9 worden de studies besproken die zijn voortgekomen uit de hiervoor besproken observatiesessies. In hoofdstuk 3 wordt de vraag beantwoord of binnen een dringensituatie beste vrienden belangrijker zijn dan andere aanwezigen bij het vormen van het drinkgedrag. Uit vele studies is gebleken dat vrienden voor adolescenten erg belangrijk zijn voor bijvoorbeeld welbevinden en ontwikkeling van sociale vaardigheden. Het ligt daarom voor de hand te verwachten dat zij een belangrijke invloed hebben op drinkgedrag en hier zijn in eerdere studies dan ook diverse aanwijzingen voor gevonden. Uit onze studie bleek dat, hoewel groepsleden een sterke invloed hebben op de hoeveelheid die gedronken wordt, dit voor de beste vriend (als die in de
betreffende situatie aanwezig was) niet sterker opgaat dan voor de andere aanwezigen. Hoewel dit effect geldt binnen de drank situatie, sluit dit natuurlijk niet uit dat de beste vriend invloed kan hebben op het besluit om uit te gaan en te gaan drinken, of juist de drinksituatie te verlaten.

Om er achter te komen of er andere sociale factoren dan de vriendschap zijn die bepalen hoe groot de invloed is van anderen op drinkgedrag, onderzochten we in hoofdstuk 4 of iemands sociometrische status een rol speelt in de hoeveelheid invloed die wordt ontvangen of uitgeoefend. Sociometrische status verwijst naar de positie die een groepslid binnen die groep inneemt ten opzichte van anderen op het gebied van sociaal relevante variabelen als populariteit, dominantie en leiderschap en wordt gemeten door groepsleden elkaar daarop te laten beoordelen. In dit hoofdstuk wordt eerst een uitgebreide verkenning gedaan naar de sociometrische dimensies die in vriendengroepen voorkomen. Vervolgens werd gekeken of deze een rol speelden in de hoeveelheid invloed op drinkgedrag die er plaatsvindt. Uit de analyses bleek dat er een grote invloed uitgaat van drinkgedrag van anderen op individueel drinkgedrag, maar dat geen van de drie geïdentificeerde dimensies, sociaal/leiderschap, conformisme en impact (de som van aardig en onaardig beoordelingen) een rol speelt in het vergroten of verkleinen van de hoeveelheid invloed die wordt uitgeoefend of ontvangen. Blijkbaar is sociale invloed betreffende drinkgedrag in een groep onafhankelijk van de sociometrische status van de groepsleden.

Ouders kunnen door middel van opvoedingstechnieken en voorbeeldgedrag veel doen om het drinkgedrag van hun kinderen te beïnvloeden. Hoofdstuk 5 was erop gericht om uit te vinden of de opvoeding en het gedrag van ouders ook een rol speelt in het voorspellen van het drinkgedrag in de jongvolwassen en in een situatie waarbij zij zelf afwezig zijn. Deze vraag is van belang omdat vanaf het ingaan van de adolescentie er steeds minder tijd met de ouders wordt doorgebracht en een op gematigd drinken gerichte opvoeding slechts geslaagd is als het gewenste gedrag ook zonder de ouders standhoudt. Uit de analyses bleek dat opvoeding ook in deze levensfase, in de afwezigheid van ouders, nog een (kleine) rol speelt in de hoeveelheid die gedronken wordt. Ervaren ondersteuning hangt samen met minder drinken. Verder hangt het gerapporteerde drinkgedrag van vader positief samen met dat van de deelnemers, al is niet duidelijk of dit door erfelijkheid komt of door imitatie. Ook blijkt dat als ouders goed in de gaten houden hoeveel hun kind drinkt, dit positief samenhangt met alcoholgebruik. Het lijkt er op alsof ouders hun kind beter in de gaten houden als deze meer drinkt.

In hoofdstuk 6 is bekeken of persoonlijkheid een rol speelt in de hoeveelheid die gedronken wordt en de mate waarin men zich door anderen laat beïnvloeden. Voor dit doel werden de “big five” persoonlijkheidsdrikkingsen gemeten. Er werd gevonden dat extraversie gerelateerd is aan gerapporteerde alcoholconsumptie en lage emotionele stabiliteit aan gerapporteerde alcoholgerelateerde problemen. De consumptie in onze observatiesetting was niet gerelateerd aan persoonlijkheid, mogelijk omdat binnen een drinksituatie vele factoren bepalen hoeveel men drinkt en daardoor individuele voorspellers naar de achtergrond verdwijnen. Als het gaat om de mate waarin men door anderen beïnvloed wordt in het drinken blijkt persoonlijkheid daarentegen wel een rol te spelen. Personen die
SAMENVATTING (summary in dutch)

hoog scoren op de persoonlijkheidsdimensie vriendelijkheid pasten zich vaker aan aan het drinkgedrag van anderen in de groep.

In hoofdstuk 7 werd bekeken wat de invloed is van verwachtingen die mensen hebben over alcoholgebruik op hun feitelijke consumptie in een sociale setting. Waar in andere studies effecten gevonden worden van positieve en opwekkende (hogere consumptie), en negatieve en kalmerende (lagere consumptie) verwachtingen, werden in onze setting alleen effecten gevonden van positieve en opwekkende verwachtingen van alcoholgebruik. Blijkbaar is alcoholgebruik in een sociale setting onafhankelijk van negatieve en kalmerende verwachtingen. Mogelijk hangen deze laatste meer samen met ontwikkelingen in de frequentie van alcoholgebruik of het moment waarop iemand stopt met drinken.

Een geïntegreerd onderdeel van hoofdstuk 7 was de rol van geslacht bij alcoholgebruik. Het bleek dat de geslachtsverdeling in een groep zeer bepalend is voor het alcoholgebruik van de groepsleden; hoe groter de proportie mannen, hoe meer zowel mannen als vrouwen drinken. Dit kan een indicatie zijn dat in groepen die voornamelijk uit mannen bestaan er een proces ontstaat dat ervoor zorgt dat men meer drinkt dan op basis van verwachtingen over individueel gebruik verwacht kan worden, ofwel door elkaar uit te dagen tot meer drinken, dan wel doordat niemand voor de ander onder wil doen.

In hoofdstuk 8 wordt verder ingezoomd op de rol van geslacht in het voorspellen van drinkgedrag met behulp van zowel vragenlijstgegevens als de observatiedata. Eerder bleek al dat mannen meer drinken dan vrouwen, maar dit wil natuurlijk niet zeggen dat de mechanismen die leiden tot een bepaald alcoholgebruik bij mannen anders zijn; ze kunnen ook vergelijkbaar zijn en bij mannen leiden tot grotere consumptie vanwege bijvoorbeeld het feit dat mannen over het algemeen fysiek in staat zijn meer te drinken. Aan de andere kant kunnen ook de mechanismen tussen mannen en vrouwen verschillen. Uit de vragenlijstgegevens kwamen voor zowel jongens als meisjes (van 12 tot 16 jaar) geen sterke indicaties naar voren dat leeftijdgenoten een sterke invloed uitoefenen op drinkgedrag. Uit onze observaties bij een oudere groep bleek echter dat mannelijke deelnemers hun alcoholgebruik veel meer aan de andere groepsgenoten aanpasten dan vrouwen. Verder staken vrouwen hun alcoholconsumptie eerder wanneer zij zich in een groep bevonden waarin mannen zaten die verwachten dat alcoholgebruik leidt tot seksuele opwinding. Mannen dronken in dit geval juist meer. Mogelijk proberen vrouwen op deze manier controle te houden over de situatie en zich te beschermen tegen ongewenste intimiteiten.

In een aantal studies is gevonden dat wanneer mensen in een drinksetting actiever zijn zij minder zullen drinken. In hoofdstuk 9 werd bekeken of dit ook het geval is als personen gedurende een langere periode geobserveerd worden. Uit de bevindingen bleek dat men inderdaad minder drinkt op het moment dat men actiever is, bijvoorbeeld met het spelen van spelletjes. Wanneer men echter stopt met actieve tijdsbesteding wordt de achterstand in alcoholgebruik ten opzichte van anderen weer goedgemaakt; dit is vooral het geval bij mannen. Dit betekent dat, over de tijd, alcoholgebruik niet
beïnvloed wordt door de activiteiten die men tijdens een drinksessie onderneemt. Hierbij moet wel in ogenschouw worden genomen dat onze observaties slechts een uur duurden en er dus geen uitspraken kunnen worden gedaan over drinksessies die langer duren.

Tenslotte werd in hoofdstuk 10 door middel van een experiment getest of afbeeldingen van alcohol en drinken op TV leiden tot meer drinken. Mannelijke vriendenparen werden uitgenodigd om in het barlab een film te komen bekijken. Tegelijkertijd mochten ze hierbij alcoholvrije of alcoholhoudende drank pakken uit een kleine koelkast. Uit het experiment bleek dat zowel alcoholreclames als het voorkomen van alcohol in films een effect heeft op hoeveel de kijkers drinken. Bovendien bleek, dat men meer slokjes dronk direct nadat er alcohol in beeld geweest was. Blijkbaar vind imitatie van drinkgedrag dus ook plaats als de persoon die geïmiteerd wordt niet lijfelijk aanwezig is. Dit geeft de indruk dat men niet slechts op een bewuste wijze imiteert om door gelijk gedrag door een ander aardig gevonden te worden; men imiteert blijkbaar ook op een minder bewust niveau.

In hoofdstuk 11 werden de bevindingen uit het proefschrift samengevat en beperkingen en mogelijkheden voor toekomstig onderzoek besproken. Zo zou het bijvoorbeeld goed zijn om in de toekomst vergelijkbaar onderzoek te doen met minderjarige jongeren, gedurende een langere periode dan een uur, of uit te zoeken of het laten betalen voor drank een verschil maakt in de bevindingen. Ook zou het goed zijn onze methode uit te breiden naar settings waarin meer en onbekende personen aanwezig zijn.

Samenvattend komt uit dit proefschrift het beeld naar voren dat, met name voor mannen, sociaal alcoholgebruik in sterke mate afhankelijk is van imitatie van anderen in de situatie, op een bewuste dan wel onbewuste manier. Ondanks dat er vele variabelen zijn die in kunnen werken op dit proces, zullen weinig jonge personen in staat zijn volledig vast te houden aan een eigen drinkpatroon wanneer met anderen gedronken wordt, als er al zoiets bestaat als een eigen drinkpatroon. We hopen met dit proefschrift te hebben laten zien dat het combineren van vragenlijstonderzoek met observaties een helder licht kan werpen op de voorspellers van drinken onder jonge mensen en een goede manier is voor het in kaart brengen van sociale processen.
This Thesis:


Others:


DANKWOORD

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CURRICULUM VITAE
Sander Bot was born on June 25, 1975, in Bodegraven. After attending an elementary school led by his father, he visited several secondary schools, mostly due to juvenile limited curiosity in educational issues. After finishing intermediate commercial education, he worked as a machine operator at a cheese wholesaler for two and a half years. His fascination for small group behaviour led him to decide to do a colloquium doctum in 1997 in order to study psychology at Leiden University. In 2001 he received his MA in social and organisational psychology, after which he started his PhD-project at the Radboud University Nijmegen, leading to this dissertation. In 2006 he finished the project and won that year’s BSI Best Paper Award. He remained teaching at the department of pedagogy until, in 2007, he started working as a researcher on effectiveness of European smoking quitlines at Stivoro, where he is currently employed.