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# Flexible assertive community treatment for individuals with a mild intellectual disability or borderline intellectual functioning: results of a longitudinal study in the Netherlands

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## Abstract

**Background** Assertive community treatment (ACT) and Flexible assertive community treatment (FACT) are organisation models for intensive assertive outreach that were originally developed for individuals with severe mental illness. The models are increasingly applied to people with mild intellectual disability (MID) or borderline intellectual functioning (BIF) and challenging behaviour or mental illness. Research on these types of care for this population is limited. To gain experience in FACT MID/BIF in the Netherlands and to obtain insight in its outcomes, four organisations specialised in the treatment of individuals with MID/BIF and challenging behaviour participated in a 6-year implementation and research project.

**Methods** A longitudinal study was set up to investigate outcomes over time. Outcome measures concerned admissions to (mental) health care, social and psychological functioning, (risk of) challenging

and criminal behaviour, social participation and client satisfaction. Data were analysed using descriptive statistics and linear mixed models.

**Results** Over time, clients showed improvement in their social and psychiatric functioning and living circumstances. The number of admissions to (mental) health care diminished as well as the number of contacts with police and justice, the level of social disturbance and the risk factors for challenging and criminal behaviour. Problems related to finances, work and substance abuse remained unchanged.

**Conclusions** The results are encouraging and give rise to continued development of and broader research on FACT MID/BIF.

**Keywords** flexible assertive community treatment (FACT), mild intellectual disability (MID), borderline intellectual functioning (BIF), challenging behaviour, mental health problems, longitudinal study design, mild intellectual disability (MID), treatment results

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## Background

Individuals with mild intellectual disabilities (MIDs; IQ 50–70) or borderline intellectual functioning (BIF;

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IQ 70–85) and mental health problems or challenging behaviour are difficult to reach with mainstream healthcare facilities and frequently do not receive the care they need. To improve care for this client group, several countries have gained experience in assertive community treatment (ACT) (Hassiotis *et al.* 2003). ACT has its origin in mental health care and was developed for people with severe mental illness who were not (adequately) treated in regular facilities, leading to relatively high percentages of dropout from treatment programmes and to crisis admissions in psychiatric hospitals. By providing ‘assertive outreach’ to (unmotivated) individuals with complex needs, ACT tries to re-engage these people. The ultimate goal of ACT is to improve the functioning and participation of clients in society and to prevent (crisis) admissions to hospitals.

An ACT team consists of a psychiatrist, behavioural specialists, social workers and (specialist) psychiatric nurses and provides intensive and long-term treatment and care in the client’s home or elsewhere in the community (e.g. in a shelter, at work and on the street). A team of around 10 professionals has joint responsibility (shared caseload) for providing a wide range of treatment and supportive interventions, including medication, support regarding living, work and finances, psychological treatment (e.g. cognitive behavioural therapy, emotion regulation and trauma treatment), addiction care and somatic care for approximately 100 clients. In the case of admission to a psychiatric hospital, the ACT team remains involved in the client’s treatment and maintains contact with the client and clinical staff. ACT has been described and standardised, and scientific research has shown positive results, albeit mainly in the USA (Kroon 2015).

In the Netherlands, an adaptation of the original ACT model has been developed: flexible ACT (FACT). FACT teams combine highly intensive multidisciplinary treatment (ACT) for unstable clients at risk of relapse with moderate intensive care for the more stabilised ones. In FACT teams, the intensity of treatment and care can be scaled up easily and flexibly (from, for instance, once or twice a week to once a day) if necessary (Van Veldhuizen 2007). FACT teams work according to the same principles as ACT teams but usually serve more clients (around 150). With more than 400 FACT teams, FACT has become the standard for organising care for

individuals with severe mental illness in the Netherlands and has found favour in other European countries (Firn and Brenton 2015).

The research base of ACT and FACT for people with intellectual disabilities (IDs) is limited. Recently, we conducted a critical review on assertive outreach for people with MID/BIF and mental health problems or challenging behaviour (Neijmeijer *et al.* 2018). We concluded that there are some indications that ACT and FACT are effective for this client group but that more research is needed. To contribute to the development of international criteria for this form of care, we introduced the FACT MID/BIF model as applied in the Netherlands and briefly described the implementation and research project we set up. In the present paper, we report on the outcomes of this study.

## Methods

### Participating organisations and teams

A 6-year implementation and research project (October 2011–October 2017) was set up in collaboration with four organisations specialised in the treatment of people with MID/BIF and mental health problems or challenging behaviour. Each facility serves a part of the Netherlands and provides inpatient as well as outpatient treatment and care. Clients are referred mainly by judicial organisations and regular facilities in the ID field or mental health care.

During the project, seven new FACT MID/BIF teams have been established within these organisations while one team was already in operation. The caseload of the teams was built up gradually using the admission criteria as described in the FACT MID/BIF model: 18 years or older; with a determined or at least a serious clinical suspicion of MID/BIF in combination with mental health problems, addiction and/or challenging or criminal behaviour; and ineligible or unmotivated for regular forms of care.

Simultaneously with the increased caseload, the staffing of the teams was also expanded so that over time all teams had a psychiatrist, one or more behavioural therapists, social workers and (psychiatric) nurses. Team members were trained in the FACT model and given coaching on the job by the first author/project leader. In addition, they

participated in exchange meetings and visited other teams. Six teams were certified officially by the Dutch Certification Centre for ACT and FACT teams during or shortly after the project, indicating that the FACT model was implemented adequately according to objective standards.

### Study set-up and instruments

Data on client characteristics and outcomes were collected yearly between September 2012 and May 2017 by the eight participating teams. Because the teams were established at different moments in time and client enrolment and discharge took place during the whole study period, the number of measurement moments differed per team and per client.

Client characteristics included socio-demographics as well as data on referrer, criminal or civil measure, diagnosis and IQ. For psychiatric diagnosis, the fourth version of the *Diagnostic and Statistical Manual of Mental Disorders* was used. The Global Assessment of Functioning (GAF) forms part of the fourth version of the *Diagnostic and Statistical Manual of Mental Disorders* and results in a score between 0 (no functioning) and 100 (optimal functioning). IQ was measured in most of the cases using the Wechsler Adult Intelligence Scale.

Outcome measures concerned number and duration of admissions and incarcerations, social and psychological functioning, social participation and client satisfaction (Table 3). Information on outcome measures was obtained from a questionnaire, containing three standardised instruments: the Health of the Nation Outcome Scales – Learning Disabilities (HoNOS-LD; Roy *et al.* 2002), the Short Version of the Dynamic Risk Outcome Scales (DROS-SV; Drieschner 2012) and the historical items of the Historical Clinical Future 30 (HKT-30; Werkgroep Risicotaxatie Forensische Psychiatrie 2002). The content of the questionnaire (including the standardised instruments) was determined in consultation with the participating teams, taking into account the psychometric properties of the instruments as well as the feasibility and relevance in clinical practice.

The HoNOS-LD is derived from the HoNOS, a widely used instrument to measure social and psychological functioning. The HoNOS has moderate psychometrical properties, takes a short

time to fill in and is rated as useful by professionals (Mulder *et al.* 2004). The LD version consists of 18 items (regarding, e.g. behavioural problems, cognitive functioning, communication and problems in relation with others) concerning functioning in the last 4 weeks. Each item can be scored from 0 (not problematical at all) to 4 (highly problematical). Compared with the HoNOS, the LD version has somewhat better psychometrical properties when applied to individuals with MID/BIF and complex problems and is preferred by professionals (Tenneij *et al.* 2009). In our study, Cronbach's  $\alpha$  was 0.83.

We used the short version of the DROS that measures dynamic risk factors for externalising behaviour in individuals with MID/BIF. The DROS-SV consists of 26 items (such as problem awareness, taking responsibility, attitude towards professional help and coping skills) that can be scored from 1 (present to the highest extent) to 5 (not present at all). Reliability and validity of the full DROS are good (Delforterie *et al.* 2018). In our study, Cronbach's  $\alpha$  was 0.92.

Because the DROS only measures dynamic risk factors, we also used the 11 historical indicators of the HKT-30. The HKT-30 is a validated Dutch instrument for the risk assessment of violent behaviour in the future. All risk factors (such as judicial history, victimisation in youth and substance abuse) are scored from 0 (not present at all) to 4 (present to the highest extent). The interrater reliability and the predictive validity of the HKT-30 are good (0.77 and 0.72, respectively) (Hildebrand *et al.* 2005). Based on the outcomes of the DROS-SV and the H-items of the HKT-30, the team members were asked to make a final risk judgement, expressed as a score between 1 (low risk) and 5 (high risk).

### Procedure

We trained the teams to routinely collect data on client characteristics and previously mentioned outcome measures at time of enrolment and subsequently each year and at deregistration. Data were provided by the team members who were most closely involved with the client. Client satisfaction was reported by the clients themselves, using a brief questionnaire. Clients were asked to give an overall score on a 10-point Likert scale illustrated with smileys.

On admission, clients were informed about the research project, both in writing and orally. Clients who did not give consent were excluded from the research. Ethical approval was given by the Committee of Ethics of the Social Faculty of the Radboud University (ECSW2016-2811-451).

### Data set

Our data set consisted of 604 unique clients. A second measurement was performed in 280 cases (46.4%), a third measurement in 79 (13.1%) cases and a fourth measurement in only seven cases. The second measurement was performed on average 13.9 months ( $SD = 7.1$ ) after the first and the third after on average 24.6 months ( $SD = 7.8$ ). The decline in response can be attributed partially to the time factor: teams started at different times and data collection ended in May 2017. The ending of the criminal measure of clients was also found to be responsible for the decline, because in many cases, this implied the ending of financing of the treatment. In the third place, the response was negatively influenced by staff-related (illness, discharge and staff shortage) and organisational circumstances in the teams and organisations.

Missing value analyses on the outcome variables showed that our data set was not complete. All cases had missing values on one or more of the outcome variables. Especially the questionnaire on client satisfaction had a high non-response (81.5%). Regarding client characteristics, it is noteworthy that in 34.1% of the cases, recent IQ test scores were not available, unknown or missing. This is indicative of the nature of the client group; because many clients have a fragmented history in health care, shelters and/or judicial institutions, client records are often incomplete. Because financiers of FACT place high demands on evidence for the presence of MID/BIF (if IQ scores are not available, professionals are obliged to report school history or screening results), it is unlikely that our data set contained clients with no MID/BIF.

### Statistical analyses

Statistical analyses were performed using SPSS 25. To measure changes over time, we used linear mixed models (LMMs). In contrast with generalised linear models, LMMs take account of hierarchical

clustering of data and correct for dependency of observations. In addition, LMMs correct for missing values and allow for an unequal number of repetitions, which are common in real-world longitudinal studies (West 2009; Shek and Ma 2011).

Based on the strategy suggested by Singer and Willet (2003), we took the following steps. To examine any mean differences in the outcome variables across individuals without regard for time, we tested an unconditional mean model. We calculated intraclass correlation coefficients (ICCs) to describe the amount of variance in the outcome that is attributed to differences between individuals and teams, respectively. For the outcome variables with an  $ICC > 0.25$ , we explored whether the growth curves were linear or curvilinear and whether the rate of change accelerated or decelerated across time by testing an unconditional growth model and higher-order polynomial models, respectively. To select the best model, we used a likelihood ratio test/deviance test, Akaike information criterion and Bayesian information criterion. For model estimation, we used the maximum likelihood method. Because addition of 'team' as a level 2 variable resulted in  $ICCs < 0.10$  (meaning that the amount of variance in the outcome variables was not affected by team differences substantially), it was not necessary to include this variable in the model. We employed a 0.05  $\alpha$  level/95% confidence interval in statistical testing.

## Results

### Client characteristics

Client characteristics are presented in Table 1. The clients were mainly men, and the average age was 33.5 years ( $SD = 11.5$ ). Two-thirds of the clients were born in the Netherlands. The majority were single or divorced, and nearly a third had a relationship or were married. Most clients lived on their own – with (9.4%) or without (38.4%) professional help – or with family, friends or acquaintances (26.3%), while a smaller group lived in a supportive housing project. The majority (87.8%) did not have a paid job and were dependent on social welfare. Two-thirds (69.2%) of the clients had financial problems or debts, and 39% were placed under guardianship. About half of the caseload (46.9%) had a criminal or civil measure on admission. Most referrals came from

**Table 1** Client characteristics (results based on the first measurement)

	<i>n</i>	%
Sex		
Male	504	83.3
Female	100	16.6
Age (years)		
<20	22	3.6
20–30	264	43.7
30–40	163	27.0
40–50	86	14.2
> 50	69	11.4
Marital status		
Married	49	8.1
Living together	68	11.3
Living alone, in a relationship	65	10.8
Living alone, single	350	57.9
Divorced	51	8.4
Other/unknown/missing	21	3.5
Country of birth		
Client and parents born in the Netherlands	315	52.2
Client and parents born outside the Netherlands	94	15.6
Client born in the Netherlands, (one or both) parents born elsewhere	82	13.6
Unknown/missing	113	18.7
Total IQ score		
50–60	38	6.3
60–70	115	19.0
70–85	171	28.3
Unknown/not diagnosed (yet)/missing	206	34.1

the probation service (35.4%), followed by facilities for people with ID (19.3%) and mental health care (17.9%).

The total IQ was on average 69.4 (SD = 8.1). *Diagnostic and Statistical Manual of Mental Disorder* diagnoses diverged. The majority of clients (79.1%) had a diagnosis at both axis I and axis II. Somatic disorders were diagnosed in about a third (32.4%) of the cases. Dependency or abuse of alcohol or cannabis was reported in 35.7% and 41.1% of the cases, respectively. In 18.4% of the cases, dependency or abuse of hard drugs was reported. The average GAF score was 44.9 (SD = 8.7), which implies that there were severe symptoms or severe limitations in social functioning.

Table 2 shows the five highest scored problem areas and the dynamic and historical risk factors. Team members assessed the risk of violent behaviour

without FACT on average as moderate/high and with FACT as moderate.

### Results of longitudinal analyses

Table 3 shows the results of the analyses. For reasons of clarity, we focus on the fixed effects. Information on the random effects is available on request. The 'linear time' column shows the change in time per month. The number of admissions to health care (regardless of the sector) declined significantly. The total score on the HoNOS-LD also declined significantly, indicating that clients showed improvement in their social and psychological functioning over time. Better functioning was not translated in a higher GAF-score, however, and neither alcohol and drugs use did change. Regarding challenging and criminal behaviour, clients showed improvement over time. The number of contacts with police and justice diminished, and team members reported significantly less dynamic risk factors than at the start of the treatment, resulting in a lower final risk judgement. Financial problems and problems related to work and daily activities did not change statistically. Housing problems declined significantly (homelessness excluded), and clients caused less social disturbance. Client satisfaction remained unchanged.

Higher-order change trajectories (i.e. quadratic and cubic models) were tested for outcome measures that showed significant values in slope parameters. The higher-order change trajectories did not contribute significantly to the model in any of the outcome variables. This indicates that the change was linear in all cases in which the analyses showed a significant change over time.

### Discussion

In this paper, we presented the results of a longitudinal study on outcomes of clients of eight Dutch FACT MID/BIF teams that collected data between September 2012 and May 2017. The results showed that the number of admissions to (mental) health care declines significantly and that clients of FACT MID/BIF teams show improved social and psychological functioning. The number of contacts with police and justice diminishes significantly, as well as the level of social disturbance, the risk factors

**Table 2** Highest scores on problem areas and risk factors

Instrument	Items	n	Mean item score	SD
HoNOS-LD 0 = no problems 4 = severe problems	Problems with work and daily activities	547	2.65	1.51
	Problems with social interactions and relationships	541	2.29	1.18
	Problems with focus and concentration	491	1.73	1.29
	Problems with mood and mood changes	532	1.48	1.16
	Problems with sleeping	453	1.37	1.32
DROS-SV 1 = high risk 5 = low risk	Coping with conflictual interactions	514	2.14	0.87
	Coping with other stressors	515	2.16	0.85
	Awareness of risk factors and danger signals	533	2.26	0.98
	Careless and short-term actions	514	2.29	1.08
	Coping with harmful impulses	498	2.32	1.00
Historical risk factors (HKT-30) 0 = low risk 4 = high risk	Labour history	508	2.87	1.29
	Drug/alcohol use	507	2.59	1.55
	History in (mental) health care	511	2.42	1.31
	Victimised by violence during youth	352	2.27	1.55
	Challenging behaviour before age of 12	409	2.19	1.41
Final risk judgement 1 = low risk 5 = high risk	With FACT	511	2.89	1.20
	Without FACT	510	3.87	1.25

DROS-SV, Short Version of the Dynamic Risk Outcome Scales; HKT-30, Historical Clinical Future 30; HoNOS-LD, Health of the Nation Outcome Scales – Learning Disabilities.

for externalising behaviour and clinical risk judgement.

While housing problems diminished significantly, clients continued to have problems with finances and employment. The fact that clients often have large debts and repayment takes a long time seems a plausible explanation for this finding. A recent study of the Netherlands Scientific Council for Government Policy shows that problematic debts, as a source for poverty and stress, lead to poor self-control and tunnel vision, which induces people to incur even more debts. This vicious circle is hard to break (Tiemeijer 2016). Also, with regard to substance abuse – a factor that probably interferes with problems with finances and work – FACT did not result in changes over time. It is common experience that substance abuse is persistent in this group (Van Duijvenbode *et al.* 2015) and that collaboration with the addiction care is often hampered because of separated organisational and financial systems. As a result, these clients possibly remain longer in the care of FACT teams and obtain less treatment results. This hypothesis should be studied in future research.

It is important to make some methodological remarks on our research project. Because we opted for an observational study without a control group,

the results cannot be attributed to the efforts of the FACT teams. We did not investigate what would have happened if clients were being treated ‘as usual’ or had no treatment at all nor did we investigate whether clients would have benefited from other forms of (community) treatment and care. Theoretically, it is possible that the results of our study can be attributed to factors other than FACT treatment, such as changes in healthcare policy or in living arrangements of clients. However, as far as we can assess, such changes did not occur.

Assuming that the positive results on several outcome measures could be (partly) attributed to the efforts of FACT MID/BIF, a next question would be which ingredients of the FACT model have contributed to the improvements. This question will be studied in the near future. Qualitative research among clients and professionals can generate useful information on how they perceive and experience the treatment from the FACT team and which factors do and do not contribute to recovery.

In this study, we also did not analyse the influence of certain client factors on the treatment results. It is plausible that some subgroups of clients benefit more or less from FACT MID/BIF. In addition to the subgroup of long-term and heavy users of alcohol and

**Table 3** Results of longitudinal analyses on FACT MID/BIF

Outcome variable	Intercept (SE)	95% confidence interval intercept	Linear time (SE) <sup>†</sup>	95% confidence interval linear time
Use of (mental) health care				
Admitted to (mental) health care (1 = no; 2 = yes)	1.26 (0.03)**	1.21, 1.31	-0.01 (0.00)**	-0.01, -0.00
Functioning				
Social and psychological functioning (total score HoNOS-LD)	16.36 (0.51)**	15.36, 17.37	-0.11 (0.03)**	-0.17, -0.06
GAF score	45.65 (0.56)**	44.55, 46.75	0.02 (0.03)	-0.04, 0.08
Dependency/misuse of alcohol or drugs (sum score)	3.80 (0.14)**	3.51, 4.08	0.00 (0.01)	-0.02, 0.02
(Risk of) delinquency and challenging behaviour				
Contact with police/justice (1 = no; 2 = yes)	1.58 (0.03)**	1.52, 1.64	-0.01 (0.00)**	-0.01, 0.00
Risk factors for delinquent/challenging behaviour (total score DROS-SV)	77.27 (1.1)**	75.16, 79.38	0.24 (0.06)**	0.13, 0.36
Final clinical risk judgement without FACT (1 = low risk; 5 = high risk)	4.00 (0.07)**	3.86, 4.15	-0.03 (0.00)**	-0.04, -0.02
Final clinical risk judgement with FACT (1 = low risk; 5 = high risk)	2.96 (0.07)**	2.82, 3.09	-0.03 (0.00)**	-0.03, -0.02
Social participation				
Employment/daily activities (1 = no; 2 = yes)	1.42 (0.03)**	1.37, 1.48	0.00 (0.00)	0.00, 0.00
Paid work (1 = no; 2 = yes)	1.09 (0.02)**	1.06, 1.13	0.00 (0.00)	0.00, 0.00
Homelessness (1 = no; 2 = yes)	1.12 (0.02)**	1.09, 1.16	0.00 (0.00)	0.00, 0.00
Financial problems (1 = no; 2 = yes)	1.70 (0.03)**	1.64, 1.75	0.00 (0.00)	0.00, 0.00
Housing problems (1 = acceptable; 5 = unacceptable)	2.06 (0.08)**	1.90, 2.22	-0.02 (0.01)**	-0.03, -0.01
Social disturbance (1 = no social disturbance; 5 = severe disturbance)	1.88 (0.07)**	1.75, 2.01	-0.02 (0.00)**	-0.02, -0.01
Overall client satisfaction (1 = very bad; 10 = very good)	7.94 (0.17)**	7.60, 8.28	-0.01 (0.01)	-0.03, 0.01

<sup>†</sup>Time unit = 1 month.\*\**P* < 0.01.

DROS-SV, Short Version of the Dynamic Risk Outcome Scales; GAF, Global Assessment of Functioning; HoNOS-LD, Health of the Nation Outcome Scales – Learning Disabilities; SE, standard error.

drugs, we know from clinical practice that clients who are referred by probation and do not seem to suffer from a severe mental illness (a group that is indicated as ‘just MID/BIF and antisocial’) often turn their back on professional care after the expiration of the criminal measure, before real treatment effects could have been obtained. It may be assumed that the client’s level of intellectual and/or adaptive functioning and the severity of challenging behaviour influences the treatment results as well; this hypothesis should also be studied.

Inherent in the set-up of our research project, the data collection was relatively difficult to regulate. Several (staff-related and organisational-related)

obstacles were met in daily practice that influenced the response. Although LMMs deal with missing values and include all available data in the analyses to study trends in time, a bias caused by selective non-response cannot be ruled out. It is possible that individuals who are difficult to treat were overrepresented in the non-response group. Because of the lack of information, we failed to perform a non-response analysis.

Taking into account the strong points of our study (large *n*, variation of outcome measures, long follow-up period and consistency in results), the results of our study may be seen as encouraging and give rise to continued development of and broader research in



FACT MID/BIF. Because FACT MID/BIF teams seem to succeed in engaging individuals who are difficult to reach by regular healthcare facilities, optimal facilitation through appropriate and cross-sectoral funding and well-equipped staff are prerequisites.

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### Conflict of Interest

The authors report no conflict of interests.

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