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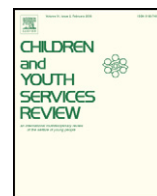
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## Detained girls' treatment engagement over time: The role of psychopathology and quality of life☆☆☆



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### ABSTRACT

Although treatment engagement is considered important to achieve positive outcomes, it is still not well known why some girls in detention are more engaged in treatment than others. This is the first study to examine to what extent psychopathology and self-perceived quality of life (QoL) are related to treatment engagement. Participants were 108 detained girls ( $M_{age} = 16.21$ ) who completed standardized questionnaires about mental health problems and QoL, and were interviewed with a structured diagnostic interview to assess DSM-IV psychiatric disorders. One and two months after this baseline assessment, the girls reported how much they engaged in treatment. The results showed low levels of treatment engagement and no significant changes in treatment engagement over time. Overall, detained girls with internalizing disorders reported higher treatment engagement scores, while the reverse was true for girls with externalizing disorders. Regarding QoL, the girls with greater satisfaction about their physical and psychological health and about their environment reported higher treatment engagement, while the opposite was true for the domain of social relationships. Our findings emphasize the need for strength-based and motivational approaches and techniques in residential treatment programs for girls, in order to enable change.

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### 1. Introduction

Detained girls constitute a very troubled and vulnerable, yet understudied, group of adolescents who often display high levels of antisocial behavior (Lederman, Dakof, Larrea, & Li, 2004; Lenssen, Doreleijers, van Dijk, & Hartman, 2000) and persistent, co-morbid psychiatric disorders (Teplin, Welty, Abram, Dulcan, & Washburn, 2012; Van Damme, Colins, & Vanderplasschen, 2014; van der Molen, Krabbendam, Beekman, Doreleijers, & Jansen, 2013). Clinicians and researchers emphasize the need to organize effective treatment services for these girls (Teplin, Abram, McClelland, Dulcan, & Mericle, 2002; Wasserman, McReynolds, Ko, Katz, & Carpenter, 2005). However, detained girls may not be willing to engage in treatment due to the

coercive nature of juvenile justice settings (van der Helm, Beunk, Stams, & van der Laan, 2014), because their psychiatric state may hinder treatment engagement (van Binsbergen, Knorth, Klomp, & Meulman, 2001), or because they seem relatively satisfied with their quality of life (Van Damme, Colins, De Maeyer, Vermeiren, & Vanderplasschen, 2015). Clearly, engaging detained girls in treatment poses great challenges. Empirical evidence on treatment engagement in this population is still scarce though, which is surprising as treatment engagement is considered an important condition for achieving positive treatment outcomes (Shirk & Karver, 2003; Smith, Duffee, Steinke, Huang, & Larkin, 2008). The present study was designed to fill this void by scrutinizing treatment engagement in relation to psychopathology and self-perceived QoL among the understudied group of detained girls.

Treatment engagement is closely related to concepts like motivation, working alliance, collaboration and compliance (Cunningham, Duffee, Huang, Steinke, & Naccarato, 2009). Historically, treatment engagement has typically been defined in a narrow way by focusing on behavioral indicators, such as treatment attendance and retention. More recently, treatment engagement is increasingly defined as a multidimensional construct that not only includes observable behavior, but also attitudes, cognitions, and relational aspects. Based on work in juvenile residential treatment settings, three dimensions of treatment engagement have

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been disentangled: readiness/motivation to change (attitude), bond with staff (relationship), and collaboration on goals and tasks (behavior), with the former being considered to be at the 'heart' of treatment engagement (Cunningham et al., 2009; Englebrect, Peterson, Scherer, & Naccarato, 2008). Prior work on treatment engagement also emphasized the potential relevance of including therapeutic engagement (cognition) in the definition of treatment engagement (Hawke, Hennen, & Gallione, 2005), as a particular index of someone's engagement in therapeutic activities, such as adopting problem-solving strategies or evaluating one's progress.

Also, treatment engagement is increasingly defined as a dynamic construct. This implies that an individual's treatment engagement can change, and that clinicians do not only need to instigate but also to monitor treatment engagement (Harder, Knorth, & Kalverboer, 2012; van Binsbergen et al., 2001). The few studies on the topic in detained adolescents indicated that poor treatment engagement is very common (Harder et al., 2012), especially among detained girls (Englebrect et al., 2008). Although levels of treatment engagement may increase or decrease (Harder et al., 2012; van Binsbergen et al., 2001), it is largely unknown why some girls are or become more engaged in treatment than others. As shown below, there is some evidence that psychopathology and self-perceived QoL may help to explain differences in treatment engagement.

Prior work among in- and out-patient adolescent populations indicated that psychopathology can be negatively (Roedelof, Bongers, & van Nieuwenhuizen, 2013; van Binsbergen et al., 2001) and positively (Breda & Riemer, 2012; Leenarts, Hoeve, Van de Ven, Lodewijks, & Doreleijers, 2013) related to treatment engagement. More specifically, the direction of this relationship depends on the type of psychopathology and dimension of treatment engagement (Breda & Heflinger, 2004; Hawke et al., 2005). Adolescents, for instance, are more willing to address their internalizing problems (e.g., depression; Leenarts et al., 2013) than their externalizing problems (e.g., substance abuse; Roedelof et al., 2013). Research has also shown that adolescents with trauma-related symptoms (e.g., distrust, anxiety) may be reluctant to bond with staff (Greenwald, 2000), whereas adolescents with anger and oppositional behavior may be reluctant to collaborate on goals and tasks (DiGiuseppe, Linscott, & Jilton, 1996).

A prior study among detained girls compared the girls' QoL scores with the QoL scores of the 12–20-year-olds from the World Health Organization (WHO)'s international field trial, consisting of boys and girls from the general population, as well as from in- and out-patient health care facilities (Van Damme et al., 2015). Detained girls perceive their QoL almost as good as the 12–20-year-olds from the WHO trial on the domains of physical health, social relationships and environment (Van Damme et al., 2015). As such, it can be argued that if detained girls do not perceive any burden themselves, they may lack problem recognition, and cannot be expected to engage in treatment only because 'non-significant' adults (e.g., clinicians, judges) think that they need treatment. Yet, this assumption contrasts the scant empirical research in adult clinical samples, indicating that QoL is positively related with hope, which – in turn – is important to increase levels of treatment engagement (Gudjonsson, Savona, Green, & Terry, 2011; Klag, Creed, & O'Callaghan, 2010).

Before highlighting the aims of the current study, it is important to describe how 'treatment' was defined and why we decided to define it as such. Because treatment in a youth detention center (YDC) consists of both an elementary program (offered to all girls) and a client-specific program (purposefully offered to address a concrete problem or need), the particular content of treatment was so diverse that we could not systemize all information. In line with prior work among detained minors (Colins, Hermans, & Vermeiren, 2012a, Colins et al., 2012b), we, therefore, perceived the stay in the YDC in itself as 'treatment'. Put differently, 'treatment' in this study refers to any particular combination of group-based services and services tailored to the needs of individual girls (e.g., in terms of psychiatric comorbidity, and

low IQ; Abram, Teplin, McClelland, & Dulcan, 2003; Kroll et al., 2002). Because well-circumscribed treatment programs are rarely available in youth detention facilities all over the world (Colins et al., 2010; Desai et al., 2006), our broad definition increases the ecological validity of studying treatment engagement among detained adolescents and facilitates comparison with prior work (Simpson, Frick, Kahn, & Evans, 2013).

The overall aim of the present study was to examine how 'baseline levels of psychopathology and QoL at the start of detention (T0)' and 'time from T1 until T2' influenced 'treatment engagement at T1 and T2' (i.e., one and two months after the baseline assessment of psychopathology and QoL), after controlling for socio-demographic and detention-related covariates. We included multiple dimensions of treatment engagement (i.e., readiness to change, bond with the staff, collaboration on goals and tasks, and therapeutic engagement), different types of psychopathology (i.e., internalizing as well as externalizing problems/disorders), and multiple domains of QoL (i.e., physical health, psychological health, social relationships, environment). The selection of socio-demographic and detention-related covariates was based on prior indications that age (Fraynt et al., 2014), origin (Leenarts et al., 2013), socioeconomic status (SES; de Haan, Boon, de Jong, Hoeve, & Vermeiren, 2013), family situation (Barnett et al., 2002), school attendance (Lee et al., 2012), detention history (Broome, Joe, & Simpson, 2001) and time in detention (Harder et al., 2012; van Binsbergen et al., 2001) are likely to influence youngsters' treatment engagement.

## 2. Method

### 2.1. Setting

The study was conducted in an all-girl YDC, being the only one in Flanders, Belgium. Girls are referred to a YDC by a juvenile judge when charged with a criminal offense or because of a problematic educational situation (e.g., truancy, running away, aggression, or prostitution). Placement in a YDC represents the most severe measure the youth court can impose. Only girls demonstrating the most severe criminal and behavioral problems are assigned to a YDC. The institution has both a restrictive and a rehabilitative function. The infrastructure (e.g., high fences, barred windows, closed doors, isolation rooms), the rigorous regime (e.g., a clearly structured day schedule, strict rules, limited and scheduled contact with family members), and the constant supervision and monitoring by the staff, are meant to ensure a safe environment and to protect the youngsters and society. The educational, pedagogical, and therapeutic program aim to promote youngsters' resocialization and reintegration (Agentschap Jongerenwelzijn, 2011).

### 2.2. Participants

Participants were 108 girls who were placed in the above described YDC. Girls were eligible to participate if they met the following criteria: (i) being adjudicated to be placed in the YDC for at least 1 month; (ii) having sufficient knowledge of Dutch; and (iii) having sufficient cognitive abilities to read and/or understand the questions. The first criterion was set to provide sufficient time to approach and assess the girls. Between February 2012 and June 2014, 215 girls entered the YDC. In total, 46 girls were excluded based on the above criteria: 11 girls were adjudicated to be placed in a YDC for less than one month, 28 girls did not have sufficient knowledge of Dutch, and 7 girls did not have sufficient cognitive abilities. The remaining 169 girls were eligible to participate. Two girls could not be approached due to acute psychiatric crisis, and 20 girls and/or their parents refused participation, resulting in a baseline (T0) sample of 147 girls (participation rate = 87%). Of this sample, 9 girls and/or their parents refused to participate at T1 and T2, and 30 girls left the YDC before T2, resulting in a final sample of 108 girls (i.e., 73% of the baseline sample).

Overall, these 108 girls were not significantly different from the girls who were not included in the present study ( $n = 39$ ) regarding socio-demographic and detention-related features and baseline levels of psychopathology and QoL (details available upon request from the first author), with three exceptions: girls in the final sample reported significantly higher rates of depressed/anxious feelings [ $M = 4.22$ ;  $SD = 2.62$  versus  $M = 3.28$ ;  $SD = 2.29$ ,  $t = -1.98$  (145),  $p = .049$ ], a significantly higher prevalence rate of CD [56% versus 33%,  $X^2 = 5.66$  (1),  $p = .017$ ], and had been detained less often in the past [14% versus 39%,  $X^2 = 10.65$  (1),  $p = .001$ ]. The age of the participants ( $n = 108$ ) ranged from 14 to 17 years ( $M = 16.21$ ;  $SD = 1.01$ ) and 32% was of non-Belgian origin. The SES was moderate-to-high for 42% of the participants, and 27% did not live with (one of) their biological parents prior to detention. More than half of the girls (58%) had been attending school during the past month before placement, and 14% had been detained in the past. The average duration of detention was 5.20 months ( $SD = 2.44$ ; range: 2.17–12.81). The average time between detention entry and assessment at T1/T2 was 1.24 months ( $SD = .17$ ; range: .92–1.77) and 2.30 months ( $SD = .28$ ; range: 1.64–3.38), respectively.

### 2.3. Procedure

Participants were approached and assessed following a standardized protocol. The girls were addressed individually, receiving oral and written information about the aims, content, and duration of the study. The girls were assured that their information would be treated confidentially and that refusal to participate would not affect their judicial status or stay in the YDC. Written informed consent was given before starting the assessment. The girls' parents also received a letter including information about the aims and practical aspects of the study and could refuse participation. Psychopathology and QoL were assessed on average 5 days ( $SD = 3.30$ ; range: 1–20) after the start of detention. About one and two months later, treatment engagement was measured. Participants were assessed in a private area in the YDC. The assessment was conducted by the first author or final-year university students, none of whom were on the staff of the YDC. Participants did not receive any financial compensation. This study was approved by the Institutional Review Board of the Faculty of Psychology and Educational Sciences at (Blinded for review) University (2011/59) and by the Board of the YDC. The present study is part of a larger, prospective cohort study focusing on detained girls' psychopathology, QoL and social adaptation before, during, and after detention.

### 2.4. Measures

#### 2.4.1. Treatment engagement

At T1 and T2, treatment engagement was assessed by means of a self-report questionnaire. Based on the work of Englebrect et al. (2008), Colins et al. (2012a) adapted a 17-item self-report questionnaire to measure treatment engagement among detained adolescents. While translating the English items into Dutch they replaced the word "staff" by a Dutch word referring to the professionals who are working most closely together with these adolescents. This Dutch word ("groepsleiders") is difficult to translate into English, but may be most appropriately translated as group care workers (i.e., pedagogical staff who monitor, supervise and act with these youths in various activities) (Colins et al., 2012a).

In line with Englebrect et al. (2008), the items were organized into three dimensions: readiness to change (e.g., 'I guess I have faults, but there's nothing I really need to change', 'Maybe this place will be able to help me'; 5 items;  $\alpha$  in the current study: T1 = .75/T2 = .80), bond with the staff (e.g., 'I trust the staff here', 'Staff here is genuinely concerned about my welfare'; 7 items;  $\alpha$ T1 = .92/T2 = .94), and collaboration on goals and tasks (e.g., 'Staff and I are working towards goals we agree on', 'I am finally doing some work on my problems'; 6 items;  $\alpha$ T1 = .73/T2 = .80). To facilitate readability and to be consistent across

items, Colins et al. (2012a) rephrased several items into the active voice, and one item was added to the dimension "collaboration on goals and tasks".

As therapeutic engagement is also considered a component of treatment engagement, Colins et al. (2012a) translated the four corresponding questions used by Hawke et al. (2005) and added these items to the aforementioned items as a fourth dimension "therapeutic engagement" (e.g., 'I have learned to analyze and plan ways to solve my problems', 'I feel good about my progress working on my problems'; 4 items;  $\alpha$ T1/T2 = .85/.84). Importantly, whereas Hawke et al. (2005) explicitly referred to counseling, Colins et al. (2012a) replaced 'counseling' by 'your stay here'.

Participants needed to score all 22 items on a 6-point rating scale, ranging from "do not agree at all" (0) until "definitely agree" (6). Subscale scores range from 0 (indicating low) to 6 (indicating high treatment engagement), representing the mean of the item scores of interest. There is some evidence that this tool enables a reliable and valid assessment of treatment engagement in adolescent forensic and clinical samples (Colins et al., 2012a; Englebrect et al., 2008; Hawke et al., 2005). Overall, the suggested four factor model provided a reasonable fit to the data in the present study. At T1 and T2, the model had a comparative fit index (CFI) value above .90 (i.e., .914 and .909, respectively) and a standardized root mean square residual (SRMR) value below .08 (i.e., .070 and .065, respectively), which indicates an acceptable fit (Hu & Bentler, 1999). The model at T1 had a mean square error of approximation (RMSEA) value below .08 (i.e., .079, 90% CI [.063; .093]), indicating a fair fit, while the model at T2 had a RMSEA value above .08 (i.e., .087, 90% CI [.072; .101]), falling between a fair (<.08) and a (.10) poor fit (Hu & Bentler, 1999; details available upon request from the first author).

#### 2.4.2. Psychopathology

At the start of detention (T0), psychopathology was assessed in two ways. The Dutch translation (Colins et al., 2014) of the Massachusetts Youth Screening Instrument-second Version (MAYSI-2; Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001) was used to assess the girls' mental health problems. This self-report questionnaire was developed for use in juvenile justice settings and includes 52 yes/no items indicating the presence or absence of symptoms related to mental health problems in the past few months (Grisso et al., 2001). The MAYSI-2 has been shown to be a reliable and valid screening instrument (Grisso et al., 2001). The 52 items are organized into six subscales by adding up the items of interest. In the current study, we included the scales alcohol/drug use (ADU; e.g., 'have you used alcohol or drugs to make you feel better?'; 8 items; range: 0–8;  $\alpha = .85$  in the current study), angry-irritable (AI; e.g., 'when you have been mad, have you stayed mad for a long time?'; 9 items; range: 0–9;  $\alpha = .80$ ), depressed-anxious (DA; e.g., 'Have nervous or worried feelings kept you from doing things you want to do?'; 9 items; range: 0–9;  $\alpha = .78$ ), suicide ideation (SI; e.g., 'have you felt like hurting yourself?'; 5 items; range: 0–5;  $\alpha = .90$ ), and traumatic experiences (TE; e.g., 'Have you ever seen someone severely injured or killed (in person, not in movies or on TV)?'; 5 items; range: 0–5;  $\alpha = .64$ ). The somatic complaints subscale was not included, because Cronbach's alpha was too low in the current study (.54).

The Dutch translation of the Diagnostic Interview Schedule for Children-IV (DISC-IV; Ferdinand & Van der Ende, 2002) was used to assess the girls' past-year prevalence of psychiatric disorders. The DISC-IV is a highly structured diagnostic interview, designed to assess if children and adolescents meet criteria for the DSM-IV disorders (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000). It is a reliable and valid structured questionnaire in both clinical and community samples (Shaffer et al., 2000). In the present study, the DISC-IV was used to assess the past-year prevalence of major depressive disorder (MDD), post-traumatic stress disorder (PTSD), separation anxiety disorder (SAD), attention-deficit/hyperactivity disorder (ADHD),

conduct disorder (CD), oppositional defiant disorder (ODD), alcohol use disorder, marijuana use disorder, and substance disorders other than alcohol and marijuana. In agreement with previous studies (Colins, Vermeiren, Schuyten, & Broekaert, 2009), we differentiated between three broadband diagnostic categories. “Pure externalizing disorders” refers to having a disruptive behavior- and/or a substance use disorder without co-morbid internalizing disorders. “Pure internalizing disorders” refers to having a mood and/or anxiety disorder without co-morbid externalizing disorders. “Both ex- and internalizing disorders” refers to the presence of at least one externalizing and one internalizing disorder.

#### 2.4.3. Quality of life

QoL was assessed at the start of detention (T0) using the WHOQOL-BREF, an abbreviated version of the WHOQOL-100 (The World Health Organization QoL Instrument; THE WHOQOL GROUP, 1998). The WHOQOL-BREF is a reliable and valid self-report instrument in adults (Trompenaars, Masthoff, Van Heck, Hodiament, & De Vries, 2005) and adolescents (Agnihotri, Awasthi, Singh, Chandra, & Thakur, 2010; Chen et al., 2006). Given our interest in QoL prior to detention, we changed the reference period of the WHOQOL-BREF from the “last 2 weeks” to “the 2 weeks before detention.” (see also: Blinded for review). Participants needed to score all items on a five-point rating scale, ranging from “very poor” (1) to “very good” (5). The WHOQOL-BREF includes four subscales to assess QoL in the domains of physical health (e.g., ‘How satisfied are you with your ability to perform your daily living activities?’; 7 items;  $\alpha = .75$  in the current study), psychological health (e.g., ‘How satisfied are you with yourself?’; 6 items;  $\alpha = .88$ ), social relationships (e.g., ‘How satisfied are you with the support you get from your friends?’; 3 items;  $\alpha = .73$ ), and environment (e.g., ‘How satisfied are you with the conditions of your living place?’; 8 items;  $\alpha = .80$ ). Subscale scores range from 0 to 100, with higher scores indicating a better QoL.

#### 2.4.4. Socio-demographic and detention-related variables

At the start of detention (T0), standardized information regarding age, origin, SES, family situation, school attendance, and detention history was gathered by means of a socio-demographic questionnaire which was used in previous studies among detained adolescents (e.g., Colins et al., 2009). Age refers to the girl’s age at T0. Origin was operationalized by dichotomizing the girls’ ethnic descent (i.e., Belgian versus non-Belgian). SES was made operational by dichotomizing parents’ occupation. Adolescents were placed in the low SES category when both parents were unemployed or holding a low-level job (unskilled and skilled labor). They were placed in the moderate-to-high category when at least one parent held a moderate-to-high-level job, working as an employee, manager, self-employed, or practitioner of a liberal profession (e.g., lawyer or doctor). The variable ‘family situation’ refers to living (versus not living) with one’s biological mother and/or father prior to detention. School attendance refers to attending (versus not attending) school during the month before detention. The variable ‘past detention’ indicates whether or not the girl had been detained in the past. For each girl, the duration of detention and the time between detention entry and assessment at T1/T2 was calculated.

#### 2.5. Statistical analyses

First, we analyzed descriptive statistics regarding detained girls’ psychopathology and QoL at baseline (T0), and their treatment engagement at T1 and T2. Second, Pearson’s correlation coefficients were used to determine the relationship between treatment engagement at T1/T2 and continuous baseline variables (e.g., QoL), while independent t-tests were used to determine the relationship between treatment engagement at T1/T2 and dichotomous baseline variables (e.g., psychiatric disorders). Third, to test to what extent treatment engagement at T1/T2 is influenced by psychopathology, QoL and time, after controlling for

socio-demographic and detention-related variables, a series of four general linear model (GLM) repeated measures analyses were performed with each of the four dimensions of treatment engagement as dependent variables. We included the main effects of the baseline predictors, the main effect of time from T1 until T2, and the interaction effects between time on the one hand and the predictors of interest on the other hand. To maximize the statistical power, we deliberately selected the independent variables for the GLM repeated measure analyses. Only those MAYSI-2 mental health subscales, DISC-IV broadband diagnostic categories, QoL domains, and socio-demographic and detention-related variables were included that were significantly ( $p < .05$ ) related to the T1/T2 treatment engagement dimension of interest in the bivariate analyses. Partial eta-squared values ( $\eta_p^2$ ) were calculated as a measure of effect size (i.e., the proportion of total variability that can be attributed to the independent variable of interest, after the effects of other independent variables have been partialled out). Values of .0099, .0588 and .1379 referred to small, medium and large effects, respectively (Richardson, 2011). Mplus was used to conduct the confirmatory factor analyses for the treatment engagement questionnaire. SPSS 22.0 was used for all other analyses, with a  $p < .05$  as the standard for statistical significance.

### 3. Results

#### 3.1. Descriptive statistics

Table 1 presents descriptive data regarding detained girls’ psychopathology and QoL at baseline. Descriptive data regarding the girls’ treatment engagement scores (theoretical range: 0–6) are provided in Fig. 1. At T1, detained girls had the highest treatment engagement score for collaboration on goals and tasks ( $M = 3.25$ ;  $SD = 1.27$ ), followed by readiness to change ( $M = 2.99$ ;  $SD = 1.49$ ), therapeutic engagement ( $M = 2.97$ ;  $SD = 1.67$ ), and bond with staff ( $M = 2.74$ ;  $SD = 1.54$ ). At T2, they reported the highest score for collaboration on goals and tasks ( $M = 3.38$ ;  $SD = 1.38$ ), followed by therapeutic engagement ( $M = 3.05$ ;  $SD = 1.60$ ), bond with staff ( $M = 2.99$ ;  $SD = 1.58$ ), and readiness to change ( $M = 2.85$ ;  $SD = 1.49$ ).

**Table 1**

Descriptive data regarding psychopathology and quality of life (QoL) at baseline ( $n = 108$ ).

	M (SD); min–max
Alcohol/drug use (0–8)	3.38 (2.69); 0–8
Angry-irritable (0–9)	5.36 (2.68); 0–9
Depressed-anxious (0–9)	4.22 (2.62); 0–9
Suicide ideation (0–5)	2.74 (2.08); 0–5
Traumatic experiences (0–5)	3.03 (1.54); 0–5
	n (%)
Major depressive disorder	43 (39.8)
Posttraumatic stress disorder	20 (18.5)
Separation anxiety disorder	32 (29.6)
Attention-deficit/hyperactivity disorder	24 (22.2)
Oppositional defiant disorder	36 (33.3)
Conduct disorder	60 (55.6)
Any alcohol use disorder	38 (35.2)
Any marijuana use disorder	58 (53.7)
Any other substance use disorder	32 (29.6)
Pure internalizing disorders	9 (8.3)
Pure externalizing disorders	36 (33.3)
Co-morbidity in- and externalizing	49 (45.4)
	M (SD); min–max
QoL physical health (0–100)	63.65 (16.31); 25–100
QoL psychological health (0–100)	53.81 (22.29); 4.17–100
QoL social relationships (0–100)	75.55 (20.26); 16.67–100
QoL environment (0–100)	63.73 (17.21); 6.25–100

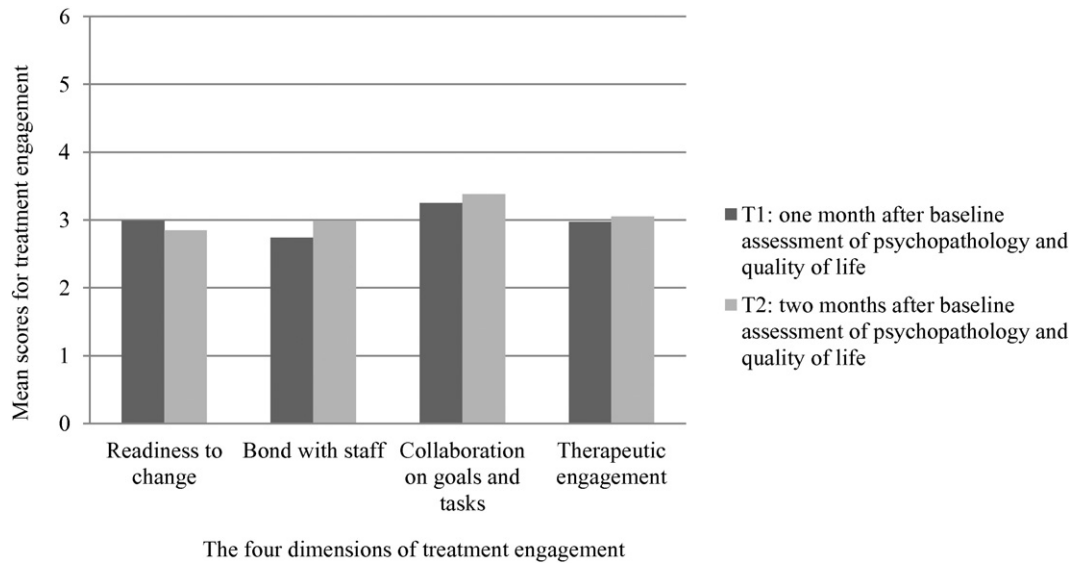


Fig. 1. Mean scores for treatment engagement at T1/T2 ( $n = 108$ ).

### 3.2. Bivariate relationships between psychopathology/QoL and treatment engagement

Tables 2 and 3 present how socio-demographic and detention-related variables, psychopathology, and QoL are associated with different dimensions of treatment engagement (details available upon request from the first author). A longer time between detention entry and T1 was associated with lower scores for readiness to change at T1 ( $r = -.23$ ). Non-Belgian girls reported lower scores for multiple dimensions of treatment engagement, compared to their Belgian counterparts [e.g., collaboration on goals and tasks (T2):  $M = 2.90$  versus  $M = 3.60$ ;  $t = 2.53$  (106),  $p = .013$ ]. Also, girls who had been attending school during the past month before placement had higher scores on all but one dimension (i.e., readiness to change) of treatment engagement, compared to girls who had not [e.g., therapeutic engagement (T1):  $M = 3.34$  versus  $M = 2.46$ ;  $t = -2.77$  (105),  $p = .007$ ].

With regard to psychopathology, none of the MAYSI-2 scale scores was related to treatment engagement. The presence of a psychiatric disorder did show significant relationships with treatment engagement, with the direction of the relationship depending on the type of disorder under consideration. Girls with internalizing disorders (more specifically separation anxiety disorder or pure internalizing disorders) reported

higher scores for multiple dimensions of treatment engagement than girls without these disorders [e.g., bond with staff (T1):  $M = 3.89$  versus  $M = 2.63$ ;  $t = -2.38$  (103),  $p = .019$ ]. On the contrary, girls with externalizing disorders (more specifically ADHD, CD, any alcohol use disorder or pure externalizing disorders) reported lower scores for multiple dimensions of treatment engagement, compared to girls without these disorders [e.g., readiness to change (T1):  $M = 2.46$  versus  $M = 3.26$ ;  $t = 2.69$  (103),  $p = .008$ ].

Regarding QoL, girls with higher scores for different dimensions of treatment engagement reported higher scores for the domains of physical health ( $r$  ranging between .20 and .23), psychological health ( $r = .22$ ) and environment ( $r$  ranging between .21 and .32), while girls with higher scores for readiness to change reported lower scores for the domain of social relationships ( $r$  ranging between  $-.22$  and  $-.24$ ).

### 3.3. GLM repeated measures analyses with socio-demographic and detention-related covariates

Table 4 presents how treatment engagement at T1/T2 is influenced by psychopathology, QoL and time, after controlling for socio-demographic and detention-related covariates. With regard to the

Table 2

Treatment engagement at T1/T2 in relation to continuous baseline predictors: age, mental health problems and quality of life (QoL): Pearson's ( $r$ ) correlation coefficients ( $n = 108$ ).

	Readiness to change		Bond with staff		Collaboration on goals and tasks		Therapeutic engagement	
	T1	T2	T1	T2	T1	T2	T1	T2
Age	-.17	-.13	.03	-.05	<.00	-.08	.10	-.04
Time between detention entry and T1/T2	-.23*	<.00	-.03	.12	-.03	.16	-.17	.07
Alcohol/drug use	.03	.01	-.16	-.02	-.14	<.00	-.05	-.06
Angry-irritable	.11	.08	-.13	-.14	-.07	-.07	-.11	-.11
Depressed-anxious	.16	.08	.00	-.05	.02	-.05	.07	.01
Suicide ideation	.14	<.00	-.05	-.04	-.04	-.04	-.01	-.05
Traumatic experiences	.09	.11	-.04	.05	-.05	-.01	.07	.01
QoL physical health	-.10	-.09	.20*	.17	.23*	.18	.18	.07
QoL psychological health	-.13	-.05	.12	.15	.19	.11	.22*	.18
QoL social relationships	-.22*	-.24*	-.01	.02	.05	.02	.04	-.04
QoL environment	.03	-.02	.24*	.30**	.32**	.28**	.25*	.21*

Note: T1 = one month after baseline assessment of psychopathology and QoL; T2 = two months after baseline assessment of psychopathology and QoL.

\*  $p < .05$ .

\*\*  $p < .01$ .

**Table 3**  
Treatment engagement at T1/T2 in relation to categorical baseline predictors: socio-demographic and detention-related variables and psychiatric disorders: Independent t-tests ( $n = 108$ ).

		Readiness to change <i>M (SD)</i>		Bond with staff <i>M (SD)</i>		Collaboration on goals and tasks <i>M (SD)</i>		Therapeutic engagement <i>M (SD)</i>	
		T1	T2	T1	T2	T1	T2	T1	T2
Origin	Non-Belgian ( $n = 35$ )	2.68 (1.49)	2.46 (1.38)	2.42 (1.70)	2.51 (1.75)*	3.11 (1.36)	2.90 (1.52)*	2.86 (1.76)	2.74 (1.66)
	Belgian ( $n = 73$ )	3.14 (1.48)	3.04 (1.51)	2.89 (1.44)	3.22 (1.46)	3.31 (1.23)	3.60 (1.26)	3.02 (1.64)	3.20 (1.56)
Socioeconomic status <sup>a</sup>	Moderate-to-high ( $n = 45$ )	3.00 (1.50)	2.93 (1.62)	2.72 (1.65)	2.96 (1.75)	3.32 (1.33)	3.50 (1.42)	3.10 (1.72)	3.24 (1.71)
	Low ( $n = 54$ )	3.12 (1.45)	2.93 (1.39)	2.85 (1.47)	3.08 (1.44)	3.24 (1.18)	3.42 (1.31)	2.93 (1.65)	2.97 (1.57)
Lives with biological parent(s)	Yes ( $n = 79$ )	3.03 (1.55)	2.80 (1.49)	2.87 (1.57)	3.04 (1.58)	3.34 (1.26)	3.43 (1.35)	2.96 (1.70)	3.05 (1.62)
	No ( $n = 29$ )	2.89 (1.33)	3.00 (1.50)	2.38 (1.40)	2.85 (1.62)	3.00 (1.30)	3.22 (1.49)	2.99 (1.61)	3.05 (1.56)
School attendance	Yes ( $n = 63$ )	3.15 (1.47)	3.00 (1.58)	2.99 (1.43)*	3.30 (1.52)*	3.54 (1.15)**	3.65 (1.37)*	3.34 (1.64)**	3.26 (1.66)
	No ( $n = 45$ )	2.77 (1.51)	2.65 (1.34)	2.38 (1.63)	2.56 (1.59)	2.84 (1.33)	3.00 (1.32)	2.46 (1.60)	2.77 (1.48)
Past detention	Yes ( $n = 93$ )	2.91 (1.43)	2.76 (1.36)	2.84 (1.65)	2.67 (1.81)	3.19 (1.35)	2.84 (1.42)	3.37 (1.91)	2.78 (1.44)
	No ( $n = 15$ )	3.00 (1.51)	2.87 (1.51)	2.72 (1.53)	3.04 (1.55)	3.26 (1.27)	3.46 (1.36)	2.90 (1.63)	3.10 (1.62)
Major depressive disorder	Yes ( $n = 43$ )	3.23 (1.53)	3.02 (1.69)	2.69 (1.65)	2.96 (1.72)	3.20 (1.28)	3.38 (1.39)	2.92 (1.87)	3.02 (1.74)
	No ( $n = 65$ )	2.83 (1.46)	2.74 (1.34)	2.77 (1.47)	3.01 (1.50)	3.26 (1.23)	3.38 (1.39)	3.00 (1.54)	3.08 (1.51)
Posttraumatic stress disorder	Yes ( $n = 20$ )	3.25 (1.25)	2.88 (1.45)	2.83 (1.57)	3.28 (1.58)	3.21 (1.28)	3.34 (1.24)	2.98 (1.96)	3.16 (1.52)
	No ( $n = 88$ )	2.93 (1.54)	2.85 (1.50)	2.72 (1.54)	2.93 (1.59)	3.24 (1.25)	3.39 (1.42)	2.97 (1.61)	3.03 (1.62)
Separation anxiety disorder	Yes ( $n = 32$ )	3.27 (1.39)	2.94 (1.48)	3.11 (1.53)	3.49 (1.54)*	3.53 (1.21)	3.60 (1.23)	3.45 (1.78)	3.52 (1.69)
	No ( $n = 76$ )	2.87 (1.52)	2.82 (1.50)	2.58 (1.52)	2.78 (1.57)	3.11 (1.25)	3.28 (1.44)	2.76 (1.59)	2.86 (1.53)
ADHD	Yes ( $n = 24$ )	2.52 (1.52)	2.74 (1.65)	2.11 (1.69)*	2.13 (1.7)**	2.91 (1.41)	2.90 (1.49)	2.22 (1.87)*	2.43 (1.65)*
	No ( $n = 84$ )	3.12 (1.46)	2.88 (1.45)	2.92 (1.45)	3.24 (1.47)	3.35 (1.22)	3.51 (1.33)	3.19 (1.55)	3.23 (1.54)
Oppositional defiant disorder	Yes ( $n = 36$ )	3.13 (1.52)	3.00 (1.80)	2.74 (1.76)	2.96 (1.68)	3.16 (1.26)	3.35 (1.35)	2.74 (1.93)	3.02 (1.67)
	No ( $n = 72$ )	2.92 (1.48)	2.78 (1.31)	2.74 (1.42)	3.01 (1.55)	3.29 (1.28)	3.39 (1.41)	3.09 (1.53)	3.07 (1.57)
Conduct disorder	Yes ( $n = 60$ )	3.04 (1.37)	2.84 (1.57)	2.43 (1.43)*	2.78 (1.62)	3.08 (1.21)	3.30 (1.32)	2.80 (1.76)	2.89 (1.64)
	No ( $n = 48$ )	2.93 (1.64)	2.88 (1.39)	3.13 (1.59)	3.26 (1.52)	3.45 (1.33)	3.48 (1.46)	3.19 (1.54)	3.27 (1.53)
Any alcohol use disorder	Yes ( $n = 38$ )	2.79 (1.40)	2.69 (1.48)	2.26 (1.52)*	2.81 (1.57)	2.94 (1.32)	3.04 (1.32)	2.53 (1.69)	2.63 (1.44)*
	No ( $n = 69$ )	3.07 (1.53)	2.93 (1.50)	2.99 (1.50)	3.07 (1.60)	3.41 (1.23)	3.54 (1.40)	3.20 (1.64)	3.27 (1.65)
Any marijuana use disorder	Yes ( $n = 58$ )	2.90 (1.45)	2.77 (1.49)	2.65 (1.47)	3.01 (1.53)	3.19 (1.19)	3.40 (1.29)	3.01 (1.67)	3.09 (1.57)
	No ( $n = 49$ )	3.09 (1.57)	2.93 (1.50)	2.85 (1.63)	2.98 (1.67)	3.33 (1.38)	3.34 (1.51)	2.93 (1.70)	3.02 (1.66)
Any other substance use disorder	Yes ( $n = 32$ )	2.73 (1.30)	2.89 (1.65)	2.37 (1.61)	2.66 (1.59)	2.96 (1.13)	3.17 (1.22)	2.66 (1.54)	2.74 (1.38)
	No ( $n = 75$ )	3.12 (1.56)	2.87 (1.40)	2.90 (1.50)	3.14 (1.58)	3.37 (1.32)	3.48 (1.45)	3.11 (1.72)	3.21 (1.67)
Pure internalizing disorders	Yes ( $n = 9$ )	3.87 (1.50)	3.53 (1.45)	3.89 (1.11)*	4.06 (1.27)*	4.07 (1.20)*	4.00 (1.20)	4.14 (1.34)*	4.36 (1.17)*
	No ( $n = 96$ )	2.90 (1.47)	2.80 (1.47)	2.63 (1.55)	2.89 (1.60)	3.17 (1.28)	3.31 (1.40)	2.87 (1.68)	2.94 (1.60)
Pure externalizing disorders	Yes ( $n = 36$ )	2.46 (1.37)**	2.48 (1.11)*	2.25 (1.25)*	2.74 (1.43)	2.85 (1.32)*	3.08 (1.51)	2.40 (1.43)**	2.74 (1.42)
	No ( $n = 69$ )	3.26 (1.49)	3.06 (1.61)	2.99 (1.65)	3.12 (1.68)	3.46 (1.23)	3.52 (1.31)	3.28 (1.74)	3.22 (1.69)
Co-morbidity in- and externalizing	Yes ( $n = 49$ )	3.22 (1.44)	3.05 (1.67)	2.67 (1.60)	2.96 (1.645)	3.29 (1.26)	3.46 (1.33)	3.04 (1.82)	3.05 (1.70)
	No ( $n = 56$ )	2.78 (1.52)	2.70 (1.27)	2.79 (1.53)	3.01 (1.57)	3.21 (1.32)	3.28 (1.45)	2.93 (1.58)	3.08 (1.55)

Note: T1 = one month after T0 assessment of psychopathology and QoL; T2 = two months after T0 assessment of psychopathology and QoL.

\*  $p < .05$ .

\*\*  $p < .01$ .

main effect of time, none of the girls' treatment engagement scores showed a significant change over a period of one month. Regarding the main effects of the included predictors, readiness to change was influenced negatively by time between detention entry and T1 ( $F(1) = 8.08$ ;  $p = .005$ ), pure externalizing disorders ( $F(1) = 5.84$ ;  $p = .017$ ), and the girls' satisfaction with their social relationships ( $F(1) = 6.11$ ;  $p = .015$ ). Bond with staff was influenced positively by Belgian origin ( $F(1) = 6.04$ ;  $p = .016$ ), school attendance ( $F(1) = 4.85$ ;  $p = .030$ ), and pure internalizing disorders ( $F(1) = 4.95$ ;  $p = .028$ ). Collaboration on goals and tasks was affected positively by Belgian origin ( $F(1) = 4.50$ ;  $p = .036$ ) and school attendance ( $F(1) = 6.52$ ;  $p = .012$ ), but negatively by pure externalizing disorders ( $F(1) = 4.35$ ;  $p = .040$ ). Detained girls' therapeutic engagement was affected positively by school attendance ( $F(1) = 4.48$ ;  $p = .037$ ) and pure internalizing disorders ( $F(1) = 4.53$ ;  $p = .036$ ), but negatively by pure externalizing disorders ( $F(1) = 4.38$ ;  $p = .039$ ). As indicated by the  $\eta_p^2$  values, the effect sizes of the above findings are small to medium, ranging from .04 to .08. Regarding interaction effects between time on the one hand and the included predictors on the other hand, no significant results could be revealed (details available upon request from the first author).

#### 4. Discussion

The present study aimed to examine how detained girls' treatment engagement during detention was influenced by psychopathology, QoL and time, after controlling for socio-demographic and detention-

related covariates. Detained girls' mean scores for readiness to change, bond with staff, collaboration on goals and tasks, and therapeutic engagement were consistently and remarkably lower than the mean scores for these four scales reported in prior European as well as American studies among detained boys and girls (Colins et al., 2012a; Colins et al., 2012b; Englebrect et al., 2008). These findings converge with prior evidence that detained girls are not very willing to engage in treatment (Englebrect et al., 2008; Harder et al., 2012). This lack of treatment engagement can be explained by the coercive nature of detention, but also by the context in which many of these girls grow up. Prior work showed that detained girls often live in detrimental conditions before placement, including psychological problems in the family, being victim of maltreatment, or involvement in prostitution (Lenssen et al., 2000; McCabe, Lansing, Garland, & Hough, 2002; Odgers, 2002). As a consequence, several girls are detained for child protective reasons, and not merely because they have committed (severe) antisocial acts (Lenssen et al., 2000). Consequently, these girls may be particularly likely to externalize reasons for antisocial behavior, to lack problem recognition, to consider placement as unfair, and to see no reasons why they should be treated in the first place (Englebrect et al., 2008; Page & Scalora, 2004).

Repeated measures analyses showed that there was no significant change in levels of treatment engagement over time. The lack of change in detained girls' treatment engagement during detention may be accounted for by the institutional climate. The highly structured and repressive nature of detention forms a major challenge, as it restricts the

Table 4

General linear model (GLM) repeated measure models predicting the four dimensions of treatment engagement at T1/T2 ( $n = 108$ ).

		B (95% CI)		t		p		$\eta_p^2$		F (1)	p	$\eta_p^2$
		T1	T2	T1	T2	T1	T2	T1	T2			
Readiness to change	Time between detention entry and T1	−1.99 (−3.57; −.40)	−2.06 (−3.65; −.48)	−2.48	−2.58	.015*	.011*	.06	.06	8.08	.005**	.08
	Pure externalizing disorders (no)	.74 (.17; 1.31)	.50 (−.07; 1.07)	2.56	1.74	.012*	.084	.06	.03	5.84	.017*	.06
Bond with staff	Quality of life Social relationships	−.01 (−.03; <.00)	−.02 (−.03; <.00)	−2.11	−2.29	.038*	.024*	.04	.05	6.11	.015*	.06
	Origin (Belgian)	.56 (−.04; 1.17)	.78 (.16; 1.40)	1.85	2.51	.068	.014*	.03	.06	6.04	.016*	.06
	School attendance (no)	−.54 (−1.13; .05)	−.63 (−1.23; −.03)	−1.82	−2.09	.072	.039*	.03	.04	4.85	.030*	.05
	Pure internalizing disorders (no)	−.98 (−2.02; .07)	−1.12 (−2.19; −.06)	−1.85	−2.10	.067	.038*	.03	.04	4.95	.028*	.05
	Pure externalizing disorder (no)	.68 (.07; 1.29)	.27 (−.35; .90)	2.20	.87	.030*	.385	.05	.01	2.98	.088	.03
	Quality of life physical health	.01 (−.02; .03)	−.01 (−.03; .02)	.59	−.55	.557	.583	>.00	>.00	>.00	.987	>.00
Collaboration on goals and tasks	Quality of life environment	.01 (−.01; .04)	.03 (>.00; .05)	.96	2.08	.338	.040*	.01	.04	2.95	.089	.03
	Origin (Belgian)	.27 (−.22; .76)	.72 (.19; 1.26)	1.10	2.67	.273	.009**	.01	.07	4.50	.036*	.04
	School attendance (no)	−.58 (−1.05; −.10)	−.59 (−1.11; −.07)	−2.40	−2.23	.018*	.028*	.06	.05	6.52	.012*	.06
	Pure internalizing disorders (no)	−.63 (−1.47; .22)	−.56 (−1.49; .37)	−1.48	−1.20	.143	.233	.02	.01	2.16	.145	.02
	Pure externalizing disorders (no)	.57 (.08; 1.07)	.42 (−.13; .96)	2.30	1.52	.024*	.132	.05	.02	4.35	.040*	.04
	Quality of life physical health	>.00 (−.02; .02)	>.00 (−.02; .02)	.26	.03	.794	.973	>.00	>.00	.03	.875	>.00
Therapeutic engagement	Quality of life environment	.02 (<.00; .04)	.02 (<.00; .04)	1.82	1.59	.071	.115	.03	.03	3.52	.064	.04
	School attendance (no)	−.79 (−.14; −.16)	−.42 (−1.04; .21)	−2.48	−1.31	.015*	.194	.06	.02	4.48	.037*	.04
	Pure internalizing disorders (no)	−.89 (−1.99; .21)	−1.22 (−2.32; −.12)	−1.61	−2.20	.110	.031*	.03	.05	4.53	.036*	.04
	Pure externalizing disorders (no)	.87 (.20; 1.53)	.39 (−.28; 1.05)	2.58	1.61	.011*	.249	.06	.01	4.38	.039*	.04
	Quality of life psychological health	.02 (−.01; .04)	.01 (−.01; .03)	1.52	.89	.131	.376	.02	.01	1.82	.180	.02
	Quality of life environment	>.00 (−.02; .03)	.01 (−.02; .03)	.25	.52	.803	.607	>.00	>.00	.18	.670	>.00

Note: None of the main effects of time and none of the interaction effects between time and the included predictors appeared to be significant.

Note: T1 = one month after baseline assessment of psychopathology and QoL; T2 = two months after baseline assessment of psychopathology and QoL; CI = confidence interval.

\*  $p < .05$ .\*\*  $p < .01$ .

youngsters' autonomy and is likely to create resistance and to hamper the development of treatment engagement (Schubert, Mulvey, Loughran, & Losoya, 2012; van der Helm et al., 2014). However, the lack of change in treatment engagement in the current sample may also be explained by the limited time frame in which treatment engagement was measured (i.e., around the first and the second month of detention). This explanation is supported by prior evidence regarding the dynamic nature of treatment engagement among detained minors (Harder et al., 2012; van Binsbergen et al., 2001). Future research is needed to explore whether adopting a broader timeframe (e.g., from admission to departure [Harder et al., 2012] or at the start of detention and four to five months later [van Binsbergen et al., 2001]) indeed elucidates more changes in detained girls' treatment engagement over time.

This study provides support for the assumption that psychopathology helps to account for differences in detained girls' level of treatment engagement, with effect sizes being small to medium. In line with prior work (Hawke et al., 2005; Leenarts et al., 2013; Roedelof et al., 2013), the relationship between treatment engagement and psychopathology depended on the type of psychopathology, with girls being more engaged to address their internalizing than their externalizing problems. This finding fits within the developmental period of adolescence, when youngsters become more self-centered, as illustrated by the emergence of personal fables of omnipotence, invulnerability, and personal uniqueness (Aalsma, Lapsley, & Flannery, 2006; Berk, 2006; Seagrave & Grisso, 2002). As such, adolescents are mainly focused on their own unique feelings and burdens (cf. their high awareness of internalizing problems), while they may be less worried about potential harm they are causing to others (cf. their limited awareness of externalizing problems). Our findings suggest that detained girls may be at least motivated to address their internalizing problems. Consequently, we recommend treatment to start off by exploring the youngsters' own burdens and priorities for change, instead of immediately focusing on changes that are expected by 'non-significant' others (e.g., clinicians). Adopting such an empowering approach among detained minors has been shown to be less threatening and more motivating (Fisher, Morgan, Print, & Leeson, 2010). It may also increase the likelihood that girls and staff agree upon the kind of problems that must be prioritized during their stay in a detention facility. Reaching such an agreement is highly relevant because having a shared problem definition is linked

to higher treatment engagement and symptom reduction (Jensen-Doss & Weisz, 2008).

Interestingly, the aforementioned relationship between treatment engagement and psychopathology was revealed when using a categorical approach of psychopathology (DSM classifications), but not when using a dimensional approach (MAYSI-2). The DISC-IV is a diagnostic instrument, assessing the past-year prevalence of psychiatric disorders (Shaffer et al., 2000). The administration of the DISC-IV takes about 70–120 minutes and consists of stem questions, investigating the overall presence of symptoms, followed by contingent questions, asking more details about the frequency, duration and intensity of the symptoms (Shaffer et al., 2000). The MAYSI-2, however, requires no more than 10 minutes to administer and includes only 52 yes/no items describing the presence or absence of mental health symptoms during the past few months (Grisso et al., 2001). The developers suggest that MAYSI-2 scores may not be a valid or stable indication of an adolescent's thoughts and feelings beyond three to four weeks after administration (Grisso & Nelson, 2014) and that the MAYSI-2 yields more false positives than may be appropriate to guide mental health intervention planning (Grisso & Barnum, 2006). Therefore, this brief screening instrument is deemed less suitable than more extensive diagnostic instruments, such as the DISC-IV, to reveal prospective associations with girls' treatment engagement one and two months after baseline measurement of mental health.

The current study provides support for the prior assumption that detained girls' QoL explains differences in levels of treatment engagement (Van Damme et al., 2015), with small to medium effect sizes. Girls who were more satisfied with their physical and psychological health and their environment reported higher levels of treatment engagement. This converges with the idea that a high QoL instigates hope, empowerment, and willingness to pursue change (Gudjonsson et al., 2011; Klag et al., 2010). Of note, the social domain of QoL displayed a negative relationship with detained girls' treatment engagement and was the only QoL predictor that remained significant after controlling for other risk factors and socio-demographic and detention-related variables. In line with our prior work (Blinded for review), the current results point to the particular importance of social relationships within the developmental phase of adolescence (Berk, 2006). As detained girls often affiliate with peers who are involved in criminal activities (Lederman et al., 2004), it is not surprising that girls



who feel popular among peers and surrounded by close, significant friends do not feel the need to engage in treatment or change their antisocial behavior, only because 'non-significant' others think they need to. Peer-helping programs, such as EQUIP, may help to monitor destructive social contacts (Brugman & Bink, 2011), and, in turn, may prevent that antisocial peer interactions impede one's treatment engagement.

Finally, the present study shows that certain socio-demographic and detention-related characteristics also help to differentiate between girls who are and girls who are not engaged in treatment, with effect sizes being small to medium. First, a longer time between detention entry and T1 was related to lower readiness to change. Increased frustration and resistance due to the highly structured and repressive nature of detention may account for this finding (Schubert et al., 2012; van der Helm et al., 2014). Further research is warranted to explore this assumption, especially since readiness to change is considered to be at the core of treatment engagement (Cunningham et al., 2009; Englebrecht et al., 2008). Second, girls from a non-Belgian ethnic background reported lower treatment engagement scores than their Belgian counterparts, a finding that coincides with findings of prior studies (Leenarts et al., 2013; van Binsbergen et al., 2001). More research is needed to explore which cultural-, language- or other barriers are likely to impact adolescents' treatment engagement negatively, or, more generally, which barriers are likely to hamper access to treatment, experienced quality of treatment and treatment outcomes (Garcia, Aisenberg, & Harachi, 2012; Garcia & Duckett, 2009; Penka, Heimann, Heinz, & Schouler-Ocak, 2008). Third, converging with prior work (Lee et al., 2012), girls who attended school during the past month before detention reported higher treatment engagement scores, compared to girls who did not. This finding corresponds with previous recommendations to strengthen adolescents' social integration, in order to increase their motivation to alter destructive behaviors (Wei, Heckman, Gay, & Weeks, 2011). Also, it urges the need for close and coordinated collaboration between the different stakeholders involved in youth affairs, including not only juvenile justice and mental health services, but also social and educational services (Anthony et al., 2010; van der Molen et al., 2013). More specifically, early and immediate engagement in school following discharge from the juvenile justice facility is needed to fight the highly prevalent school failure or drop-out among detained minors after release into the community and to prevent recidivism (Abram, Choe, Washburn, Romero, & Teplin, 2009; Anthony et al., 2010; Bullis, Yovanoff, & Havel, 2004).

The findings must be interpreted in the context of some limitations. First, the results of the current study only pertain to the group of detained girls meeting the inclusion criteria. Consequently, we missed at least two important subgroups of detained girls (i.e., girls with limited cognitive capacities and limited knowledge of Dutch), which can be considered particularly vulnerable and challenging to treat (Frola, 2009; Garcia et al., 2012). In addition, 27% of the intended follow-up sample dropped out. Girls included in this study had significantly higher rates of depressed/anxious feelings and CD, and had been detained less often in the past, compared to the girls who dropped out. This suggests that we reached the most vulnerable and disturbed group of detained girls who were relatively new to or unfamiliar with the YDCs. This may have contributed to the remarkably low treatment engagement scores. Future studies are warranted to see if these findings can be replicated in other, larger samples of detained girls.

Second, our sole reliance on self-report can be considered another study limitation. Although third-party information may have some prognostic usefulness (Colins et al., 2012a; Colins et al., 2012b), parents and teachers are difficult to locate and often unwilling or unable to provide (reliable) information (Colins, Vermeiren, Schuyten, Broekaert, & Soye, 2008; Fink, Tant, Tremba, & Kiehl, 2012). Therefore, self-report is often a main source of information for detention staff, which implies that our reliance on self-report can also be regarded as a strength. Nevertheless, we did not ask group care workers to rate detained girls' treatment engagement in the present study. We acknowledge that this is a

limitation that must be addressed in future research, especially because it may help to reveal discrepancies between adolescents' and staff's perception of treatment engagement (Harder et al., 2012; van Binsbergen et al., 2001).

Third, the small sample size forced us to only include a limited selection of predictors. As a consequence, we included interaction effects between time from T1 until T2 on the one hand and the included predictors on the other hand, but no interaction effects between psychopathology and QoL, for example. Based on the conceptual model of Drieschner, Lammers, and van der Staak (2004), the relationship between treatment engagement and psychopathology is likely to be mediated or even moderated by one's QoL. Future research is needed to test this hypothesis in a larger sample of detained girls.

Fourth, the small sample size also forced us to run four separate repeated measures analyses, in order to predict the four dimensions of treatment engagement at T1/T2. Future work should test whether our findings can be replicated in a larger sample of detained girls, testing only one model that simultaneously includes all four dimensions of treatment engagement. Such a statistical strategy would enable to gain a better insight in the multidimensional nature of treatment engagement, highlighting the particularity and the relative importance of each dimension of treatment engagement.

Finally, given our focus on the role of psychopathology and QoL in relation to detained girls' treatment engagement, we did not consider other plausible determinants of treatment engagement. The small to medium effect sizes indicate that the extent to which detained girls are engaged in treatment is only marginally influenced by their psychopathology and QoL. Various other correlates may play an important role in determining detained girls' treatment engagement. We suggest future work to address, for example, the role of callous-unemotional traits (Simpson et al., 2013), social integration (Wei et al., 2011), treatment satisfaction (Harder et al., 2012; Pihet, Passini, & Holzer, 2013), living group climate and coping (van der Helm et al., 2014) in determining detained girls' treatment engagement. Also, based on prior work (Englebrecht et al., 2008), we recommend future studies to include both male and female adolescents, in order to gain insight in the gender-specific manifestation and correlates of treatment engagement among detained minors.

Despite the aforementioned limitations this study has important clinical implications. Detained girls' low levels of treatment engagement support the need for motivational approaches and techniques, in order to enable change. In line with prior work (Fisher et al., 2010; Wylie & Griffin, 2013), we suggest YDCs to adopt a strength-based empowering approach, instead of a merely directive and problem-focused approach. For example, instead of *imposing* particular treatment goals, YDC staff should actively *involve* youngsters in defining treatment goals that are personally meaningful to them (Ward & Gannon, 2006). Such efforts will help to create a more positive and motivating climate for change (Thakker, Ward, & Tidmarsh, 2006; van der Helm et al., 2014). In addition, concrete motivational techniques should be part of the YDC's client-specific program. Motivational interviewing (Hettema, Steele, & Miller, 2005; Walitzer, Dermen, & Connors, 1999), for example, could be offered in case externalizing problems or deviant peer interactions tend to impede detained girls' treatment engagement.

## 5. Conclusion

The present study contributes to the current scientific knowledge about the understudied group of girls in detention, by its focus on treatment engagement in relation to psychopathology and QoL. Detained girls reported low levels of treatment engagement and showed no change in treatment engagement over time. Our results indicate that detained girls may be at least motivated to address their internalizing problems, and that satisfaction with QoL domains of physical and psychological health and environment may serve as a source of empowerment and may facilitate treatment engagement. After all, our findings

emphasize the necessity of strength-based and motivational approaches and techniques among detained girls, in order to enable change. Conflict of interest The authors declare that there is no conflict of interest, except that one of the developers of a measure used in this study has co-authored the paper. This may be viewed as a potential conflict of interest.

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