Depressive symptoms and self-harm among youngsters referred to Child Welfare:

The role of trust in caregiver support and communication

Tara Santens¹, Laurence Claes^{2,3}, Guy S. Diamond⁴, Guy Bosmans¹

¹ Parenting and Special Education Research Unit, University of Leuven (KU Leuven), Leopold Vanderkelenstraat 32, box 3765, 3000 Leuven, Belgium. Tara.Santens@kuleuven.be; Guy.Bosmans@kuleuven.be

² Clinical Psychology, University of Leuven (KU Leuven), Faculty of Psychology and Educational Sciences, Tiensestraat 102, box 3720, 3000 Leuven, Belgium. Laurence.Claes@kuleuven.be

³ Collaborative Antwerp Research Institute (CAPRI), Faculty of Medicine and Health Sciences, University of Antwerp, Universiteitsplein 1, 2610 Wilrijk, Belgium. Laurence.Claes@uantwerpen.be

⁴ Center For Family Intervention Science, College of Nursing and Health Professions, Drexel University, 3020 Market Street, Suite 510, Philadelphia, PA, 19104, USA. gd342@drexel.edu

Corresponding author: Tara Santens. Email: tara.santens@kuleuven.be. Address: Leopold Vanderkelenstraat 32, 3000 Leuven. Phone: 0032 16/37.38.82

Abstract

Depressive symptoms and self-harm, i.e. non-suicidal self-injury and suicidal behaviors, are highly prevalent in youngsters involved in Child Welfare System (CWS) services. Little research investigates, however, why these CWS youngsters are at risk. We explored whether trust in caregiver support and communication about experiences with primary caregivers, are associated with CWS youngsters' depressive symptoms and/or self-harm. An anonymous online survey of 271 CWS youngsters (10-21 years of age, 57.2% female) was used to assess trust and communication, and depressive symptoms/self-harm. Results showed significant negative associations between self-reported trust in maternal and paternal support, and depressive symptoms/self-harm. Communication about experiences with one's biological mother mediated the relationship between trust in maternal support and depressive symptoms/self-harm. Furthermore, the presence of an additional trustworthy caregiver buffered the impact of low trust in maternal or paternal support on depressive symptoms/self-harm. Implications for interventions targeting CWS youngsters' depressive symptoms and self-harm are discussed.

Keywords

Child Welfare, Adolescence, Depressive symptoms, Self-harm, Trust, Communication

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Youngsters involved in the Child Welfare System (CWS) are characterized by high rates of mental health problems (Blower, Addo, Hodgson, Lamington, & Towlson, 2004). Especially the high rates of depressive symptoms, non-suicidal self-injurious behavior (NSSI) and suicidal ideation (SI) in CWS youngsters are of great concern to CWS workers and policy makers (Lüdtke et al., 2017). NSSI and SI can be situated on a spectrum of self-harm behaviors (Claes & Muehlenkamp, 2014). At its worst, the presence of depressive symptoms and self-harm can lead to suicide, which stands among the leading causes of death in youngsters worldwide (World Health Organisation, 2014). Given the mortality risk and severe impaired functioning associated with even subclinical levels of depressive symptoms and self-harm (Lewinsohn, Solomon, Seeley, & Zeiss, 2000), more research is needed to understand high depression and self-harm rates in CWS youngsters.

Surprisingly, little research focused on mechanisms and moderators that help understand CWS youngsters' depression and self-harm rates. One area that has been underinvestigated is the role of the quality of relationships with primary caregivers. The consideration of how relationships with biological parents and/or other primary caregivers are linked to depressive symptoms and self-harm is particularly relevant for CWS youngsters that typically experience disruptions in these relationships. A recent study showed that CWS youngsters with a stronger connection to caregivers were less likely to report self-harm (He, Fulginiti, & Finno-velasquez, 2015). The authors suggested the need to further identify which factors explain the link between the quality of connectedness and CWS youngsters' mental health problems. General population research points to youngsters' lack of trust in caregiver support as one way to explain why children struggle with mental health problems. Therefore, the current study aims to investigate

whether and how lack of trust in caregiver support may be an important factor to understand depressive symptoms and self-harm in CWS youngsters.

Trust in caregiver support is most intensively studied in the context of attachment research. Although attachment is a multifaceted concept, trust is perceived as a central component (Bosmans & Kerns, 2015). According to attachment theory, when parents are emotionally available, responsive and attuned, children tend to develop trust in the parent's ability to provide protection, comfort and support in times of emotional distress (Bowlby, 1969). These youngsters are referred to as securely attached and, across the lifespan, are shown to be less at risk to develop mental health problems (Sroufe, 2005). On the contrary, when children repeatedly experience that their parent is emotionally unavailable or unresponsive, they tend to lack trust in the parent as a resource to provide support (Bowlby, 1969). These youngsters are referred to as insecurely attached and, across the lifespan, are shown to be more at risk to develop mental health problems (Ainsworth, 1989; Sroufe, 2005). Although attachment research traditionally focuses on biological parents as primary caregivers, attachment theory also assumes that any caregiver with whom the child establishes an enduring emotional bond can become an attachment figure in whom children can learn to trust for support.

There are many reasons why youngsters in CWS are more at risk to have less trust in parental support. Above all, families of children involved in CWS generally struggle with multiple, chronic, and complex problems on various life domains (Bodden & Dekovic, 2015; Ghesquière, 1993). In these chaotic conditions with multiple stressors and substantial emotional turmoil, youngsters are often growing up with parents who are emotionally unavailable and unresponsive, and in more extreme cases, abusive or neglectful. Growing up in these relational conditions, is linked with reduced trust in caregivers' support (Bosmans, Braet, Van Leeuwen, & Beyers, 2006; Doyle & Markiewicz, 2005). Although research on attachment in

general, and trust in specific, in youngsters in the CWS is rare, studies on younger CWS children suggest that these children likely lack trust in parental support, and that rates of insecure attachment are high (Baer & Martinez, 2006).

Lack of trust in parental support in the context of insecure attachment relationships is demonstrated to be a transdiagnostic risk factor for the development of mental health problems (DeKlyen & Greenberg, 2008). Although little research has focused on CWS youngsters, longitudinal studies in general and psychiatric populations consistently indicate that youngsters with lack of trust in parental support are more at risk for depression and self-harm. With regard to depressive symptoms, Madigan and colleagues' meta-analysis (2015) supported that from early childhood through to adolescence, the quality of attachment relationships is consistently linked with the development of depressive symptoms. With regard to indicators of the self-harm spectrum, insecure attachment has consistently been identified as a significant risk factor for NSSI (Bureau et al., 2010; Gandhi et al., 2016) and SI (DiFilippo & Overholser, 2000). Consequently, the current study's first hypothesis is that, in CWS youngsters, depressive symptoms and self-harm are associated with lack of trust in parental support.

To understand this relationship between trust in parental support and depressive symptoms/self-harm, general population research showed that communication about experiences and distress can be an important mediating factor (Dujardin et al., 2016). According to these studies, lack of trust in parental support reduces the likelihood that youngsters seek parental support during distress and communicate about their experiences with their parents as a way to help regulate distress. Instead, children with less trust are more likely to use maladaptive coping strategies, which puts them more at risk to develop depressive symptoms when facing stressful challenges in life (Dujardin et al., 2016; Malik, Wells, & Wittkowski, 2015). Therefore, the current study's second hypothesis is that communication mediates the link between trust and self-harm/depressive symptoms in CWS youngsters.

Finally, recent research demonstrated that maladaptive effects of impaired parental relationships can be buffered by supportive relationships with other trustworthy caregivers (Buyse, Verschueren, & Doumen, 2011; Mota, Costa, & Matos, 2015; Van Ijzendoorn & Juffer, 2006). Often, CWS youngsters receive additional care from significant other caregivers, such as foster parents, residential care workers, adoptive parents, and/or other family members (e.g., grandparents, older siblings, aunts/uncles). Consequently, in cases where reunification with parents or restoring breaches of trust in parents is not possible, establishing supportive relationships with alternative/additional caregivers may help CWS youngsters get back on developmental track, which makes this also a viable permanency goal. Therefore, in the current study, we asked CWS youngsters whether they have (had) a significant additional caregiver, and the extent to which they trust in this caregiver's support during emotional distress. Hence, the current study's third hypothesis is that the presence of a significant additional trustworthy caregiver moderates the association between trust in parental support and depressive symptoms/self-harm in CWS youngsters.

In summary, the current study aims to explore three research questions. First, we hypothesize that CWS youngsters' depressive symptoms and self-harm behaviors are associated with less trust in parental support. Second, we predict that the association between CWS youngsters' reduced trust in parental support and increased depressive symptoms/self-harm can be understood by reduced communication about their experiences and distress with their biological parents. Finally, we hypothesize that the presence of a significant additional trustworthy caregiver buffers the development of depressive symptoms/self-harm for youngsters who have less trust in parental support. All research questions will be tested for youngsters' perception of the relationship with their biological mother and father separately because previous work on parent-child relationships has found differential effects for relationships with each parent (Hilt, Nock, Lloyd-Richardson, & Prinstein, 2008; Shek, 1998).

Moreover, to operationalize the spectrum of self-harm, we used four groups ranging from self-care to severe self-harm, as evidenced and validated by Claes and colleagues (2010): youngsters without NSSI and SI, with only NSSI, with only SI, and with both NSSI and SI. Youngsters with higher scores on this spectrum have been shown to exhibit significantly greater levels of psychopathology and lower levels of adaptive coping skills (Claes et al., 2010). Additionally, research shows (a) that depressive symptoms and self-harm emerge in pre-adolescence, and increase dramatically from early to late adolescence (age 13 until 19) (Hankin et al., 1998), (b) that approximately twice as many girls are struggling with emotional problems as boys (Hankin et al., 1998), and (c) that youth in different levels of care (residential care, foster care, or home-based care) report different levels of problems (Janssens & Deboutte, 2010). Therefore, we will control for gender, age and type of CWS setting in all analyses.

Method

Procedure and participants

To be eligible for the study, subjects had to be between 10 and 21 years of age and involved in the Flemish CWS between May 2014 and May 2015. Due to confidentiality issues, the research staff was not given direct access to the email list of CWS youngsters. We contacted all CWS agency directors by email (plus four reminder emails), and asked them to send out our invitation to participate in the online survey to all eligible clients in their CWS service. It is estimated that the Flemish CWS has about 18,800 youngsters that may have been eligible for the study over the time period of one year (Jongerenwelzijn, 2014). Out of the 245 agencies we contacted, 56 consented to participate in the study (22.9%), and agreed to send the survey to their clients. Agency directors gave us an indication of the number of eligible youngsters involved in their service, based on which we estimate that around 1200 youngsters were contacted. We announced that the study was anonymous, and focused on the topic of '*you and your relationships with others*'. We specified that we ask questions (1) to get to know them

better, (2) about the way they interact with other people in their lives, and (3) to indicate on a general list of problems that youngsters can struggle with, to what extent each problem is applicable to them. CWS youngsters gave online informed consent to participate. Parental permission was obtained through passive informed consent. CWS services agreed to give a letter explaining the research to parents, legal guardians and/or other important primary caregivers, and assured that they were given the chance to ask questions. If those caregivers did not contact the CWS agency director or research staff, we assumed they agreed for their child to participate. The ethical committee of the local university approved the entire procedure.

A total of 271 Flemish CWS youngsters agreed to participate in the study (1.4% of the total CWS population, a 23% return of the contacted youngsters). Study participant characteristics are presented in Table 1.

Measures

Quality of the relationship with caregivers

Trust and communication. Youngsters filled out the short version (12 items) of the Inventory of Parent and Peer Attachment about their biological mother and biological father (IPPA; Armsden & Greenberg, 1987; translated into Dutch by Noom, Dekovic, & Meeus, 1999). Items are rated on a 4-point Likert-scale ranging from (1) ‘almost never’ to (4) ‘nearly always’. Items can be clustered into 3 subscales: Trust, Communication and Alienation. In light of the current study’s research questions, only the Trust and Communication scales were used. Trust measures the extent to which children are confident that they can rely on their caregiver’s support (4 items, e.g. ‘When I am angry about something, my mother tries to be understanding’). Communication measures the extent and quality of communication with the caregiver about youngsters’ experiences and distress (4 items, e.g. ‘I tell my mother about my problems and troubles’). The abbreviated scales have shown predictive validity (Laible, Carlo, & Raffaelli, 2000), and have been used in previous research (Laible, Carlo, & Roesch, 2004;

Ma & Huebner, 2008). Cronbach's alpha coefficients for Trust and Communication in the present study were respectively .84 and .69 for biological mother, and .84 and .70 for biological father. Trust and communication are often aggregated to form a single index of attachment security, but several studies investigated these two subscales as different factors. Results suggested that both scales have a specific contribution to the explanation of outcome variables, supporting the discriminant validity of these two subscales (Bosmans, Dujardin, Raes, & Braet, 2012; Claes, De Raedt, Van de Walle, & Bosmans, 2016).

CWS youngsters who indicated that they had never known their biological parent, were not asked to fill out questions about the relationship with that parent. Children who indicated that they had known their biological parent, but that this parent was absent in their lives at the time of the study, were asked to answer the questions about their past relationship with this absent parent. This because research shows that past caregiving experiences with biological parents play an important role in understanding youngsters' current expectations about care.

Presence/absence of a significant additional trustworthy caregiver. CWS youngsters were asked to answer the following YES/NO question "Is there another adult in your life (not your biological mother or father) who plays or used to play a significant role raising you?". If the youngsters said yes, they were asked who the caregiver was and how long this person has been a part of their lives. To assess trust in this significant additional caregiver's support and the quality of communication about experiences, youngsters filled out the 12-items of IPPA as described above for this significant other caregiver. Cronbach's alpha coefficients for Trust and Communication were in the present study respectively .71 and .67 for the significant additional caregiver. Because we lack Trust and Communication scores for children who indicated to have no significant other caregiver, we used the presence/absence of a significant other caregiver variable as moderator in the analyses of research question 3.

Depressive symptoms and self-harm

Youth Self-Report for Ages 11-18. The Youth Self-Report (YSR/11-18; Achenbach, 1991; translated into Dutch by Verhulst, van der Ende, & Koot, 1997) is a 112-item questionnaire used to assess a broad range of adolescent self-reported emotional and behavioral problems over the past six months. Items are rated on a 3-point Likert scale from (0) ‘not true’ to (2) ‘very true or often true’. The measure consists of 2 Social Competence scales and 8 Syndrome Scales, which can be grouped into 2 larger Internalizing/Externalizing scales. In light of the current study’s research questions, only two subscales were administered: a) the Withdrawn-Depressed subscale, which denotes more detached behavior (e.g., ‘I refuse to talk’), and b) the Anxious-Depressed subscale, which points to fearfulness and feelings of sadness (e.g., ‘I am too fearful or anxious’). The latter scale also includes one item on suicidal ideation. The YSR is a widely used measure, both for clinical and research purposes, of which reliability and validity have been extensively documented (Achenbach & Rescorla, 2001). Cronbach’s alpha coefficients were .89 for the Anxious-Depressed subscale, and .79 for the Withdrawn-Depressed subscale in the present study. To define the (sub)clinical level of depressive symptoms on the Withdrawn-Depressed and Anxious-Depressed subscales of the YSR/11-18, we used cut-off scores as defined in a norm group of American boys and girls between 11 and 18 years old (Achenbach & Rescorla, 2001). No Flemish norm data are available.

Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997; translated to Dutch by Muris, Meesters, & van den Berg, 2003). This is a brief self-report screening instrument to assess behavioral and psychological difficulties in children and adolescents. The SDQ consists of 25 items that are rated on a 3-point scale ranging from (0) ‘not true’ to (2) ‘certainly true’. Items can be clustered in 5 subscales consisting of 5 items each. In light of the current study’s research questions, we only administered the subscale ‘Emotional symptoms’ (e.g., ‘I am often unhappy, downhearted or tearful’). Difficulties are reflected by higher scores on this subscale. The SDQ is a widely used measure, both for clinical and research purposes, of which reliability

and validity have been extensively documented (Muris, Meesters, & van den Berg, 2003). The Cronbach's alpha coefficient for the subscale Emotional symptoms in the present study was .67. To define the (sub)clinical level of depressive symptoms on the Emotional Symptoms subscale, we used cut-off scores as defined in a norm group of Flemish boys and girls between 11 and 18 years old (Verpraet, Janssens, & Deboutte, 2011).

Compound score of Depressive Symptoms. We used Principal Component Analysis in SPSS to calculate a common factor score based on the mean scores of the three measures for Depressive Symptoms: the Withdrawn-Depressed subscale of the YSR, the Anxious-Depressed subscale of the YSR, and the Emotional symptoms subscale of the SDQ. One factor with an eigenvalue higher than 1 (2.37) was extracted with the Withdrawn-Depressed scale, Anxious-Depressed scale, Emotional symptoms loading respectively .86, .93, .88 on this factor. This factor explains 78.89% of the total variance. All analyses were conducted with this compound score of Depressive Symptoms.

Self-harm spectrum. Two YES/NO questions were used to assess respectively the presence/absence of NSSI and SI: (1) 'Have you ever intentionally injured yourself without the intent to die?', and (2) 'I thought about killing myself (now or during the past six months)'. Both questions are part of a reliable and validated questionnaire, respectively the Self-Injury Questionnaire-Treatment Related (SIQ-TR; Claes & Vandereycken, 2007) and the YSR/11-18 (as described above). Four groups reflected increasing severity of self-harm and were handled as a spectrum from self-care to self-harm: youngsters without NSSI and SI, with only NSSI, with only SI, and with both NSSI and SI.

Statistical plan

Preliminary, we calculated correlations between the study's main variables, i.e. Trust, Communication, Depressive Symptoms (compound score), and Self-harm spectrum. We checked for effects of gender, age and type of CWS service (residential care, foster care, home-

based services) on the main variables of the study. Furthermore, we reported the prevalence of depressive symptoms and self-harm to evaluate whether the current CWS sample is relevant to study depression and self-harm related processes. Because of the age-effect, we calculated the prevalence of depressive symptoms/self-harm for pre-adolescents (10 to 12 years of age) and adolescents (13 to 19 years of age) separately. Frequencies were not calculated for young adults between 19 and 21 years old because the number of participants within this group was too small.

For research question 1, correlations were calculated between Trust in maternal/paternal support and Depressive symptoms/Self-harm. For research question 2, mediation hypotheses were tested using the SPSS macro PROCESS, Model 4 (Hayes, 2013), with Trust as independent variable, Depressive symptoms/Self-harm as dependent variables, and Communication as mediating variable. We used a bootstrap with 10,000 resamples. For research question 3, moderation hypotheses were tested using multiple regression analyses.

Results

Preliminary Analyses. For the 271 youngsters who filled out the survey, there were 3.48% missing values on the questionnaire scales. Data were missing at random (Little MCAR Test: $\chi^2(36) = 44.75, p = .15$). Missing data were pairwise deleted, and no total score was calculated on questionnaires that contained missing responses. For descriptive statistics, associations with age and gender, and correlations between the study's main variables, see Table 2. There were significant differences between the main study variables in function of gender, age, and type of CWS setting (Table 2 & 3). Concerning gender, boys scored significantly higher on Communication with biological mother and Trust in paternal support compared to girls. Girls scored significantly higher on Depressive symptoms and the Spectrum of self-harm compared to boys. Concerning age, correlations showed that older youngsters have significantly lower scores on Trust in maternal support and Communication with Biological mother. In addition, older youngsters have significantly higher scores on Depressive symptoms

and the Spectrum of self-harm. Concerning type of CWS setting, there was a significant effect of the type of CWS setting on Trust in maternal and paternal support, and Communication with biological mother and father for the three conditions: Foster care, Residential care, and Home-based Services (Table 3). Chi² analyses indicated that youngsters in Foster care (15.1%) were significantly less likely to report lifetime NSSI compared to youngsters in Residential care (34.8%) or Home-based care (33.3%), $\chi^2(3, N = 254) = 13.05, p = .005$. The prevalence of youngsters with suicidal ideation, emotional symptoms, withdrawn-depressed or anxious-depressed symptoms above the subclinical level did not significantly differ by type of CWS setting ($.25 < ps < .56$). Given the significant effects of gender, age and type of CWS setting on the main study variables, we controlled for these variables in further analyses.

If youngsters reported to have a significant other caregiver, on average, they reported significantly higher scores on Trust in and Communication with this caregiver (Table 2) in comparison to Trust in ($t(197) = -8.460, p = .000$) and Communication with ($t(197) = -11.683, p = .000$) their biological mother, and Trust in ($t(173) = -11.275, p = .000$) and Communication with ($t(173) = -13.750, p = .000$) their biological father. A Chi² test was calculated to test whether CWS youngsters' report of the presence of absence of a significant additional caregiver was related to the type of CWS care. A significant interaction was found $\chi^2(3) = 12.56, p = .006$. Youngsters in Residential care were more likely to report the presence of a significant additional caregiver (55%) than youngsters in Foster care (24.5%), Home-based care (8%), or other types of care such as day care (12.5%).

Prevalence of depressive symptoms and self-harm¹. In order to get an indication of the (sub)clinical nature of the current CWS sample on the dependent variables of the study, we calculated the number of pre-adolescents and adolescents that reported a subclinical level of depressive symptoms, and the number of youngsters who endorsed to engage in lifetime NSSI,

¹ A table showing the prevalence of self-harm and (sub)clinical depressive symptoms in CWS youngsters per type of service can be obtained from the authors.

and SI over the past six months (Table 4). Concerning the self-harm spectrum, participants were divided into four groups based on the absence/presence of NSSI and/or SI. We calculated the number of pre-adolescents and adolescents who belonged to each group (Table 4).

Research question 1: Are depressive symptoms and self-harm of youngsters involved in CWS services associated with trust in parental support?

Results of Pearson's correlations (Table 2) showed that higher scores on Trust in maternal support were significantly linked to lower scores on the compound score of Depressive symptoms. For Trust in paternal support, the relationship with Depressive symptoms was marginally significant. In addition, correlations between Trust in paternal support and the Self-harm spectrum showed that higher scores on Trust in paternal support were significantly linked to lower scores on the self-harm spectrum. No significant association for Trust in maternal support and the Self-harm spectrum was found.

Next, partial correlations were calculated to control for Gender, Age, and Type of Service (all in the same analyses). The link between Trust in maternal support and Depressive symptoms remained significant, $r(218) = -.18, p = .008$. The association between Trust in paternal support remained significantly associated with the Spectrum of self-harm, $r(217) = -.18, p = .010$, but the association between Trust in paternal support and Depressive symptoms was no longer significant, $r(218) = -.09, p = .201$.

Research question 2: Does communication about experiences mediate the relationship between trust in parental support and depressive symptoms/self-harm?

Results of the mediation analyses showed that the relationship between Trust in maternal support and the compound score of Depressive symptoms is mediated by Communication with biological mother (Figure 1a), controlled for gender, age and type of CWS service. More specifically, more Trust in maternal support is associated with more Communication about experiences, and more Communication is related to less Depressive

symptoms. The indirect effect of communication was estimated to lie between $-.0766$ and $-.0136$. Because zero is not included in the 95% CI for the indirect effect, we can conclude that the indirect effect is significantly different from zero at $p < .05$. This model explained 12.81% (R^2) of the variance in Depressive symptoms ($F(6,246) = 6.02, p < .000$).

Second, we conducted a similar analysis to investigate whether Communication about experiences mediated the association between Trust in maternal support and the Spectrum of self-harm as dependent variable. The results showed that the relationship between Trust in maternal support and the Spectrum of self-harm is mediated by Communication with biological mother (Figure 1b). More specifically, more Trust is associated with more Communication, and more Communication is related to lower scores on the Spectrum of self-harm. The indirect effect of communication was estimated to lie between $-.0896$ and $-.0006$. Because zero is not included in the 95% CI for the indirect effect, we can conclude that the indirect effect is significantly different from zero at $p < .05$. This model explained 12.08% (R^2) of the variance on the Spectrum of self-harm ($F(6,245) = 5.61, p < .000$).

Third, the same analyses were repeated for biological father. There was no significant indirect effect of Trust in paternal support on Depressive symptoms ($B = 0.01, SE = 0.02, 90\%-CI [-0.028, 0.017]$) nor on the Spectrum of self-harm ($B = -0.002, SE = 0.03, 90\%-CI [-0.057, 0.053]$) through Communication with biological father, controlled for gender, age and type of CWS service.

Research question 3: Does the presence/absence of a significant additional trustworthy caregiver moderate the relationship between trust in maternal/paternal support and depressive symptoms/self-harm?

A multiple regression analysis was conducted to examine the moderating effect of the Presence/absence of a significant additional trustworthy caregiver on the association between Trust in maternal/paternal support and Depressive symptoms/Spectrum of self-harm.

With all predictors including control variables entered, results of moderation analyses revealed significant interaction effects between Trust in maternal support and the Presence/absence of a significant other caregiver on Depressive symptoms and the Spectrum of self-harm (Table 5a). Specifically, results of further analyses of the slopes showed that youngsters with less trust in maternal support had a significant lower probability to have depressive symptoms and to engage in self-harm when they reported the presence of a significant other caregiver (Figure 2a).

Table 5b shows that also the interaction effect between Trust in paternal support and the Presence/absence of a significant other caregiver on Depressive symptoms was significant. Specifically, further analyses of the slopes demonstrated that youngsters with less trust in paternal support had a significant lower probability to have depressive symptoms when they reported the presence of a significant additional caregiver (Figure 2b). The interaction effect between Trust in paternal support and the presence/absence of a significant other caregiver on the spectrum of self-harm was not significant (Table 5b).

Discussion

The current study investigated the association between the quality of relationships with biological parents and depressive symptoms/self-harm in a sample of CWS youngsters. Additionally, we explored whether having a trustworthy significant additional caregiver buffers the maladaptive effect of reduced trust in parental support. For this purpose, we conducted an online survey measuring self-reported trust, communication and depressive symptoms/self-harm in CWS youngsters. CWS youngsters in the current study were characterized by high prevalence rates of (sub)clinical levels of depressive symptoms and self-harm. More specifically, compared to the prevalence found in previous research in non-CWS samples, we found considerably higher rates of depressive symptoms and self-harm than in general population peers, and similar rates to those found in clinical samples. Of the total sample, 32.5% of the participants had a score above the subclinical cut-off for Emotional Symptoms on the

SDQ (20.5% above the clinical cut-off). This is almost three times more than found in a Flemish norm group of adolescents between 11 and 18 years old (Verpraet et al., 2011). Furthermore, almost twice as many CWS youngsters of the current sample engaged in lifetime NSSI (32.7%) compared to normal population youngsters (13.71% in Baetens, Claes, Muehlenkamp, Grietens, & Onghena, 2011; 18% in Muehlenkamp, Claes, Havertape, & Plener, 2012), and also suicidal ideation rates during the past six months in the current sample of CWS adolescents are remarkably high (41.8%) compared to the lifetime prevalence of suicidal ideation in non-clinical adolescents (29.9%; Evans, Hawton, Rodham, & Deeks, 2005). The current study's high prevalence of depressive symptoms and self-harm confirms previous findings that a large number of CWS youngsters suffers from severe and disabling depressive symptoms and engages in self-harm (Janssens & Deboutte, 2010; Katz et al., 2011; Lüdtke et al., 2017). This suggests that the current CWS sample is relevant and valid to study the research questions regarding mechanisms and moderators that may help understand depressive symptoms and self-harm within CWS youngsters.

Research question 1: Depressive symptoms and self-harm of CWS youngsters are respectively associated with trust in maternal and paternal support.

In line with earlier studies in normal and high risk populations (Bureau et al., 2010; He et al., 2015; Madigan, Brumariu, Villani, Atkinson, & Lyons-ruth, 2015), results of the current study confirmed the hypothesis that for CWS youngsters, high or low trust in parental support is respectively related to youngsters' emotional adjustment or maladjustment. Apart from testing this hypothesis in a CWS sample, the current study contributed to the literature by investigating these links for the relationship with the mother and the father simultaneously. Interestingly, different patterns of correlations emerged for each parent. More specifically, lower scores on trust in maternal support were uniquely associated with more depressive symptoms, whereas lower scores on trust in paternal support were uniquely associated with

higher scores on self-harm. This finding is in line with attachment theory's claim that attachment relationships with mothers and fathers are equally important and influential, but that each contributes to the development in distinct domains (Bretherton, 2010). The same pattern of differential results has been found in previous studies, with stronger links between attachment to mother and internalizing problems (Al-Yagon, 2014), and stronger links between attachment to fathers and NSSI (Fujimori et al., 2011; Hilt et al., 2008) and SI (Gould, Shaffer, Fisher, & Garfinkel, 1998).

Research question 2: Communication about experiences and distress mediates the relationship between trust in maternal support and depressive symptoms/self-harm

Results supported the hypothesis of an indirect effect of trust in maternal support on depressive symptoms and self-harm through communication about experiences and distress with mother. More specifically, CWS youngsters who are less able to trust in maternal support are less likely to communicate with their mother about experiences and distress, which is linked to more depressive symptoms and more severe self-harm. This is in line with previous cross-sectional and longitudinal research in general population youngsters showing that youngsters who trust less in the availability of their attachment figure as a source for support, wait longer to seek support when experiencing distress (Dujardin et al., 2016) and communicate less about experiences and distress (Claes et al., 2016), which is, in turn, associated with more depressive symptoms and more severe self-harm.

Second, the current study also adds to this literature by investigating whether the same mechanism also applies to CWS youngsters' trust in paternal support. We did not find evidence for the indirect effect of trust in paternal support on depressive symptoms nor self-harm through communication about experiences with father. Again, this suggests that trust in maternal and paternal support is linked with depressive symptoms and self-harm through different pathways. This finding is in line with previous research suggesting that communication with mother and

father may fulfil different but equally influential roles (Bretherton, 2010; Verschueren & Marcoen, 1999).

Research question 3: The presence of a significant other caregiver can serve as a protective factor in the relationship between trust in maternal/paternal support and depressive symptoms and/or self-harm.

Results supported the hypothesis that the presence of a significant additional caregiver buffers the development of psychopathology in CWS youngsters who have less trust in maternal or paternal support. With depressive symptoms as dependent variable, the interaction was consistently found for trust in both maternal and paternal support. These findings are in line with previous research showing that supportive relationships with other caregivers, such as teachers, foster parents, adoption parents, or other family members, can protect against adverse effects of impaired parental relationships (Buyse, Verschueren, & Doumen, 2011; Mota, Costa, & Matos, 2015; van Ijzendoorn & Juffer, 2006). These results are promising, suggesting that it is advisable in treatment of CWS youngsters with depressive symptoms and low trust in parental support to, in the best case scenario, focus on repairing breaches of trust in parental support and improving supportive communication with biological parents. However, if reunification seems less feasible or when breaches of trust cannot be restored, it should be advised to focus treatment on improving the relationship with one or more additional/alternative caregivers to buffer the damaging effects of the lost/ruptured contact with biological parents. With self-harm as dependent variable, the interaction was only found when trust was reported about mother. This is in line with previous research that showed that trust in maternal support serves as a protective factor against NSSI (Gandhi et al., 2016).

Finally, results suggested that CWS youngsters with higher trust in maternal support had higher scores on depressive symptoms and self-harm when they reported that a significant additional caregiver was present compared to when no significant other caregiver was available.

This finding may reflect an underlying loyalty conflict because these youngsters may feel pressured to maintain a relationship with both caregivers, certainly when they are put in a position where they feel they have to choose between one or the other (Boszormenyi-Nagy, Grunebaum, & Ulrich, 1991).

These findings should be interpreted with caution because we had no information about (1) the time since removal from home, and (2) the number of caregiver transitions that CWS youngsters have experienced. Typically, CWS youngsters differ in how long they have been removed from their home, and many CWS youngsters have experienced several transitions and changes in additional caregivers and CWS services. Future research should include these variables to understand whether and how these are related to reported levels of trust in biological parents and additional caregivers. One can hypothesize that it may be more difficult for youngsters to trust in and effectively communicate with biological parents the longer they have been removed from home. In addition, youngsters who report higher numbers of caregiver transitions, may have several times experienced rejection or abandonment by caregivers or CWS services, which might be associated with less trust in additional caregivers' availability and support. Consequently, this might have suppressed the beneficial effects of having an additional caregiver.

Methodological Limitations

First, the analyses were conducted with cross-sectional data. This hampers interpretation of the findings in terms of direction of effects. It is impossible to draw causal conclusions. Consequently, it is equally possible that depressive symptoms/self-harm predict differences in trust in parental support. This way, findings may suggest that depressive symptoms and/or self-harm can lead to less trust in parental support due to less sensitive, responsive and attuned reactions of parents to the youngster's symptoms and attachment needs. However, an important question is whether or not parents are aware of CWS youngsters' depressive symptoms and

self-harm, which we did not assess in the current study. Nevertheless, it is promising that the same pattern of associations emerges as found in longitudinal research (Dujardin et al., 2016).

Second, although we reached a substantial number of youngsters within CWS services that agreed to participate, this represents only a small percentage of youngsters that are every year referred to Child Welfare (Jongerenwelzijn, 2014). CWS youngsters have always been a difficult group to study (Cahalane, 2013), and the current study's response rate was in line with previous survey research in this population. However, the low response rate might raise questions regarding how representative the current sample is. If more emotionally/relationally disturbed youngsters felt more attracted to participate in the study, this may have overestimated the prevalence of depressive symptoms and self-harm. However, this explanation seems less likely because typically, surveys like the one used in the current study attract better functioning youngsters who engage less in risk behaviors (Kypri, Samaranayaka, Connor, Langley, & MacLennan, 2011). This would mean that the current findings are more likely an underestimation of the prevalence of depressive symptoms and self-harm, which makes the current results even more compelling.

In addition, children who are placed in residential care seem to be overrepresented in the current CWS sample as the majority of the Flemish CWS population is guided by home-based services. Consequently, the current results may mainly represent processes related to out of home placement. More comparison research is needed to test whether or not effects are similar in different types of CWS services. Nonetheless, the current study provided important first insights into attachment-related mechanisms underlying depressive symptoms and self-harm in a sample of CWS children who typically experienced disruptions in relationships with primary caregivers.

Third, the current study is based on online self-report questionnaires. Although self-report questionnaires are valuable to gather information regarding trust in caregivers' support

and emotional problems/self-harm (Madigan et al., 2015), other methods like behavioral or representational measures, and multiple informants should be used in future research. This is necessary to account for the possibility that the observed correlations have been inflated by common method variance or informant bias, and to investigate whether the effects found in the current study can be replicated by means of alternative measures for (lack of) trust (e.g., autobiographical interviews like the Adult Attachment Interview; Main, Kaplan, & Cassidy, 1985). Furthermore, although the use of an online survey for research provides interesting opportunities, it presents methodological challenges as well (Wright, 2005). Examining depressive symptoms and the quality of caregiving relationships online may raise the concern that because of the online nature, one has no control about the conditions in which questions have been filled out (e.g., presence of the (professional) caregiver when filling out the questionnaire). On the contrary, the anonymity associated with responding to questionnaires online may have facilitated honest answers and less pressure to respond in a socially desirable manner.

Fourth, to create the self-harm spectrum, we assessed the *lifetime* presence/absence of NSSI, and the *recent/6-months* presence/absence of SI. Consequently, a youngster who had suicidal ideation about seven months ago, but engaged in NSSI three years ago, was appointed to the group ‘NSSI only’. Given that a post-hoc $\chi^2(1, N = 254) = 56.21, p = .000$, and given that the results of mediation and moderation analyses were similar when, post-hoc, we repeated the analyses with lifetime NSSI and recent SI as separate dependent variables, it is less likely that the results are affected by the current study’s measurement strategy. Nevertheless, it would be valuable in future research to further investigate whether the associations differ if the history of NSSI/SI is disentangled in more detail.

In spite of these limitations, current findings are important because they alert for the high prevalence of depressive symptoms and self-harm in CWS youngsters across services, and they add to previous research by exploring attachment-related processes, i.e. trust in caregiver support and communication, that help understand the mechanisms explaining these mental health problems. More specifically, the current data suggests that youngsters with more depressive symptoms or self-harm in CWS report less trust in and communication with significant primary caregivers. More research is needed with more participants, multiple informants, and multiple time points in order to draw causal conclusions.

Clinical implications

The current study suggests that CWS youngsters' experience of trust in caregiver availability and support, either parental or a significant additional trustworthy caregiver, is protective for adaptive development. Consequently, it is advisable for clinicians to take into account the quality of child-caregiver attachment relationships when trying to prevent or treat depressive symptoms and self-harm in CWS youngsters. Results of the current study suggest that it seems reasonable to assume that interventions aimed at restoring CWS youngsters' breaches in trust and communication with biological parents, or with a significant additional/alternative caregiver, can help decrease depressive symptoms and self-harm. A promising treatment option for CWS youngsters with emotional problems and/or self-harm may be found in attachment-based interventions (Kobak, Zajac, Herres, & Krauthamer Ewing, 2015; Mennen & O'Keefe, 2005). For example, within the context of Attachment-Based Family Therapy (ABFT; Diamond, Diamond, & Levy, 2014), treatment strategies have been developed and proven effective to restore interpersonal breaches of trust and rebuild trust in caregiver support, supportive communication, and an emotionally protective, secure-based parent-child relationship. More specifically, ABFT aims to re-establish the primary caregiver as a resource for the youngster to regulate emotional distress through supportive communication about

experiences. Therefore, attachment-based interventions, like ABFT, seem to be a promising treatment option for CWS youngsters and their families to help prevent and/or treat depressive symptoms and self-harm.

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Table 1

Study participant characteristics

Variables	Mean (SD) or Count (%)
-----------	------------------------

Age in years	14.38 (2.69)
Sex	
Female	57.2%
Male	42.8%
CWS services	
Residential care	53.1%
Foster care	21%
Home-based care	12.2%
Raised by biological parent(s)	
Both biological mother and father	23.6%
Biological mother	37.5%
Biological father	25.5%
Absence of biological parent(s)	
Biological mother currently not present	15.5%
Biological father currently not present	27.7%
Biological mother never known	0.7%
Biological father never known	11.4%
Raised by additional caregiver(s)	76.9%
Family member	40.7%
Stepparent	8%
Foster or adoption parent	20.6%
Residential care worker	21.6%
Additional caregiver(s) involved since	
≤ 2 years	16.6%
2 – 5 years	19.6%
5-10 years	26.1%
≥ 10 years	37.7%

Table 2*Means, Standard Deviations, and Correlations between the Study's Main variables, Age, and Gender*

	1	2	3	4	5	6	7	8	9
<u>Quality of relationships</u>									
1. Trust Mother	1								
2. Communication Mother	.72***	1							
3. Trust Father	.28***	.33***	1						
4. Communication Father	.18**	.36***	.79***	1					
5. Trust additional caregiver	.08	.01	.04	.04	1				
6. Communication additional caregiver	-.11	-.01	.02	.08	.59***	1			
<u>Maladaptive functioning</u>									
7. Self-harm spectrum	-.10	-.19**	-.18**	-.16*	-.25***	-.25***	1		
8. Depressive symptoms (compound score)	-.19**	-.27***	-.12	-.09	-.18**	-.13	.61***	1	
<u>Demographic variables</u>									
9. Age	-.22***	-.23**	-.08	-.11	-.14	-.05	.20**	.16**	1
10. Gender	-.09	-.12*	-.13*	-.10	-.04	-.02	.21**	.23**	.07
<i>Mean</i>	11.70	9.28	10.52	8.58	14.04	12.57	1.05	0	14.38
<i>SD</i>	3.65	3.23	3.91	3.37	2.25	2.72	1.26	1	2.69
<i>Min</i>	4	4	4	4	4	5	0	-1.61	10
<i>Max</i>	16	16	16	16	16	16	3	2.83	21
<i>N</i>	269	269	231	231	200	200	254	255	271

Note. *** p <.001; ** p <.01; * p <.05; Gender is dummy coded (boy=0, girl=1)

Table 3

Means and Standard deviations for the main variables of the study per type of CWS service, and ANOVAs with Tukey HSD comparisons

		Residential care	Home-based care	Foster care	ANOVA		
Scale		Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)	<i>F</i>	<i>df</i>	<i>p</i>
Trust	Biological mother	12.04 (3.51) ^a	13.33 (2.27) ^a	9.54 (4.05) ^b	10.52	3,265	.000
	Biological father	11.05 (3.88) ^a	11.24 (4.11) ^a	8.43 (3.67) ^b	5.60	3,227	.001
	Significant other caregiver	14.03 (2.16)	13.63 (1.89)	14.49 (2.23)	1.35	3,196	.258
Communication	Biological mother	9.42 (3.19) ^a	10.39 (2.75) ^a	8.09 (3.36) ^b	4.25	3,265	.006
	Biological father	8.86 (3.50) ^a	9.44 (3.69) ^a	7.43 (3.08) ^b	2.64	3,227	.050
	Significant other caregiver	12.60 (2.62)	11.75 (2.65)	13.20 (2.70)	2.31	3,196	.078
Emotional problems (compound score)		.07 (1.03)	-0.08 (.99)	-0.13 (.96)	.61	3,251	.608
Self-harm spectrum (NSSI and/or SI)		1.14 (1.29)	1.00 (1.27)	0.68 (1.07)	2.29	3,251	.079

Note. Letters indicate significant differences at $p < .05$ using the Tukey HSD comparisons

Table 4

Prevalence of self-harm and depressive symptoms above the subclinical cut-off in pre-adolescents and adolescents involved in CWS

	Pre-adolescents (%) (<i>N</i> = 72)	Adolescents (%) (<i>N</i> = 177)	Total Group (%) (<i>N</i> = 255)
Emotional symptoms	25.0	35.6	32.5
Withdrawn-Depressed symptoms	13.9	29.4	25.5
Anxious-Depressed symptoms	23.6	34.5	31.4
Lifetime NSSI	16.7	38.6	32.7
SI (over the past 6 months)	22.2	41.8	36.5
Self-harm Spectrum			
No NSSI/no SI	70.8	46.9	53.3
NSSI only	6.9	11.3	10.2
SI only	12.5	14.5	13.8
Both NSSI and SI	9.7	27.3	22.4

Table 5a: *Linear Regression of the Interaction between Trust in maternal support x Presence/Absence of a significant other caregiver on Depressive symptoms/Spectrum of self-harm*

	Depressive symptoms		Self-harm spectrum	
	β	ΔR^2	β	ΔR^2
Step 1		.11***		.10***
Trust in maternal support	-.21***		-.14*	
Presence/absence of a significant other caregiver	-.03		-.06	
Gender	.19**		.16**	
Age	.10		.16*	
Residential care	.08		-.03	
Foster care	-.06		-.18*	
Home-based care	.06		-.00	
Step 2		.03**		.04***
Trust x Presence/Absence of a significant other caregiver	.18**		.22***	

* $p < .05$, ** $p < .01$, *** $p < .001$; reported β s reflect values at Step 2

Table 5b: *Linear Regression of the Interaction between Trust in paternal support x Presence/absence of a significant other caregiver on Depressive symptoms/Spectrum of self-harm*

	Depressive symptoms		Self-harm spectrum	
	β	ΔR^2	β	ΔR^2
Step 1		.07*		.13***
Trust in paternal support	-.10		-.18**	
Presence/absence of a significant other caregiver	-.05		-.08	
Gender	.16*		.15*	
Age	.15*		.20**	
Residential care	.06		-.02	
Foster care	.02		-.13	
Home-based care	.06		.02	
Step 2		.03**		.01
Trust x Presence/Absence of a significant other caregiver	.17**		.08	

* $p < .05$, ** $p < .01$, *** $p < .001$; reported β s reflect values at Step 2

Figures

Figure 1a. *Unstandardized Regression Coefficients With Standard Errors of the Mediation Analyses With Trust Mother as Independent Variable (IV), Communication Mother as Mediating Variable (M), Depressive symptoms as dependent variable (DV) and gender, age and type of CWS service as covariates (10,000 bootstrap samples, $n = 220$). Significant point estimate of indirect effect at the 95% CI.*

Note. $*p < .05$; $**p < .01$; $***p < .001$

Figure 1b. *Unstandardized Regression Coefficients With Standard Errors of the Mediation Analyses With Trust Mother as Independent Variable (IV), Communication Mother as Mediating Variable (M), Spectrum of self-harm as dependent variable (DV) and gender, age and type of CWS service as covariates (10,000 bootstrap samples, $n = 253$). Significant point estimate of indirect effect at the 95% CI.*

Note. $*p < .05$; $**p < .01$; $***p < .001$

Fig. 2a Interaction between Trust in maternal support and the presence/absence of a significant other caregiver on depressive symptoms and self-harm, controlled for gender, age and type of CWS service

Fig. 2b Interaction between Trust in paternal support and the Presence/absence of a significant other caregiver on Depressive symptoms, controlled for gender, age and type of CWS service