

Linking Stressful Experiences and Psychological Problems: The Role of Self-Esteem

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Abstract

Stressful experiences have repeatedly been related to psychological problems. The current study extends previous work on stress and psychological problems by examining the link between stressful experiences and both internalizing (INT) and externalizing (EXT) problems. Additionally, individual differences are investigated by testing the moderating role of self-esteem. Questionnaire data of 750 adolescents aged 12–18 were collected and analyzed using multiple regression analyses. Analyses were controlled for sex and socioeconomic status. Results indicated that adolescents who report more stressful experiences are more likely to experience both INT and EXT problems, and these relationships were stronger for adolescents with low self-esteem. Post hoc analyses (e.g., different thresholds for determining stressful experiences) support the robustness of our findings. The findings on self-esteem emphasize the importance of taking individual differences into account in the relation between stressful experiences and psychological problems. The results can be seen as a next step in cross-sectional research.

Keywords

stressful experiences, internalizing problems, externalizing problems, self-esteem, adolescence

The experience of stressful experiences has repeatedly been related to the development of psychological problems (Brown, Harris, & Peto, 1973; Cicchetti & Toth, 1991, 1997; Laceulle et al. 2014; Waaktaar, Borge, Fundingsrud, Christie, & Torgersen, 2004). Specifically, it has been found that people who have more stressful experiences are also more likely to report psychological problems (Haine, Ayes, Sandler, & Weyer, 2003). So far, however, much of the research in this field was conducted in adult populations, leaving it unclear whether this relationship also exists in adolescence. This is surprising, as adolescence is characterized by a peak in (the onset of) psychological problems (Dahl, 2004), as well as by many other changes (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Sarason, Johnson, & Siegel, 1978). The current study extends previous work on stress and psychological problems, by examining whether the experience of stressful experiences is related to internalizing (INT) and externalizing (EXT) problems in adolescence. Additionally, individual differences in these links are investigated by testing the moderating role of self-esteem.

Stressful Experiences and Psychological Problems During Adolescence

Psychological problems can be seen as an umbrella term for all kinds of psychopathology. Within this overarching term, research has traditionally focused on a two-dimensional

structure in psychological problems (Achenbach, 1966; Achenbach & Edelbrock, 1978; Krueger, Caspi, Moffit, & Silva, 1998; Krueger, Johnson, & Kling, 2006), differentiating between INT and EXT problems. INT problems direct themselves inward toward the individual experiencing them, whereas EXT problems are those problems that direct themselves outward and toward others (Achenbach, 1991). For many of these problems, incidence rates rise steeply from early adolescence onward (Bernstein, Borchardt, & Perwien, 1996; Dahl, 2004; Hankin et al., 1998). This, together with the major biological, psychological, and social changes and intense interactions with the environment typical for the adolescent years raises the question if and to what extent adolescence is a window of vulnerability for the effects of environmental adversity.

Previous research has shown that the experience of adversity, and stressful experiences in particular, is associated with the development of psychological problems (Brown et al.,

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1973; Cicchetti & Toth, 1997; Laceulle et al., 2014; Waaktaar et al., 2004). This has also been framed in the context of the developmentally based life-stress model, which focuses on the interplay between child and environment in the development of psychopathology (Rudolph et al., 2000). Although the model was originally developed to understand associations between stressful experiences and depression, the model has been applied to a wide range of psychological problems. Empirical evidence has provided consistent support for the link between stressful experiences and INT problems. Although much of this research was conducted in adult samples (Osvath, Vörös, & Fekete, 2004; Paykel, 2003), more recently, interest has sparked in understanding whether and how stressful experiences are related to INT problems in adolescence (e.g., Laceulle et al., 2014; Waaktaar et al., 2004) and to depression in particular (Grant et al., 2006; Hankin, Mermelstein, & Roesch, 2007; McMahon, Grant, Compas, Thurm, & Ey, 2003).

The relationship between stressful experiences and psychopathology has also been studied for EXT problems, but to a much lesser degree. Studies in adult samples found support for links between stressful experiences and anger (Osvath et al., 2004) and conduct and oppositional behavior problems (Tiet et al., 2001). In adolescents, Suldo and Huebner (2004) found that stressful experiences may lead to psychopathological EXT behavior. Rydell (2010) found that stressful experiences were associated with higher levels of attention deficit hyperactivity disorder and oppositional defiant disorder symptoms in 10-year-old children. Together, these findings suggest the importance of stressful experiences in psychopathology, both during adolescence and beyond. So far however, research has barely examined the link between stressful experiences and both INT and EXT problems during adolescence. Whereas the link with problems in the INT domain may follow logically from theoretical models (e.g., the life-stress model), empirical findings from the last decade suggest that stress may be related to a broader range of psychological problems.

Individual Differences in the Relationship Between Stressful Experiences and Psychological Problems: The Role of Self-Esteem

The studies mentioned above provide evidence for an association between stressful experiences and psychopathology. However, it is crucial to identify factors that may explain interindividual differences in the link between stress and psychopathology. Several factors have been identified that are thought to moderate the link between stressful experiences and psychopathology, including attitudes, family environment, and coping (Grant et al., 2006). An alternative factor crucial to consider in the context of stress sensitivity during adolescence is self-esteem. Whereas self-esteem starts to develop early in life (Harter, 2006), the development as well as the correlates and consequences of self-esteem may be of particular importance during adolescence due to major personal and social changes.

This vulnerability with regard to adolescent self-esteem has previously been linked to feelings of depression and suicidal ideation (Harter & Marold, 1994; Harter & Whitesell, 1996) and might explain individual differences in the association between stressful experiences and psychological problems. Previous research in adults has suggested that this may be indeed be the case, but less is known about the role of self-esteem in the link between stressful experiences and psychopathology in adolescence, and in particular in relation to EXT problems. However, some correlational work has found strong relations between low self-esteem and INT and EXT problems (Mann, Hosman, Schaalma, & De Vries, 2004), as well as between low self-esteem and stressful experiences (Wilburn & Smith, 2005) in adolescence, suggesting self-esteem may also play an important role in this life stage.

The assumption of self-esteem as a moderator is well in line with the classic psychosocial model of Brown and Harris (1978), stating that the relationship between life stress and psychopathology (i.e., depression) is moderated by an individual's self-esteem. In an alternative model, Metalsky, Joiner, Hardin, and Abrahamson (1993) combined attributional style, self-esteem, and life stress as vulnerability to depressive symptoms. Ever since the proposition of a psychosocial model by Brown and Harris (1978) and the integrated model by Metalsky and colleagues (1993), several studies have examined the role of self-esteem in the link between stressful experiences and adult psychopathology. In many cases, researchers found evidence for the role of self-esteem as a moderator in the relation between stressful experiences and psychological problems (Abela, Webb, Wagner, Ho, & Adams, 2006; Brown, Andrews, Bifulco, & Veiel, 1990; Brown, Bifulco, & Andrews, 1990; Moksnes, Moljord, Espnes, & Byrne, 2010; Southall & Roberts, 2002). For example, in a community sample of adults with a history of major depression, Abela and colleagues (2006) found that high self-esteem acted as a buffer against depressive symptoms following the occurrence of negative experiences. Others, however, failed to find a moderating role of self-esteem (Lewinsohn, Steinmetz, Larson, & Franklin, 1981; Orth, Robins, & Meier, 2009; Robinson, Garber, & Hilsman, 1995).

Taken together, evidence for the role of self-esteem is mixed, focused almost exclusively on INT problems, and largely limited to adult samples. As such, it is unclear to what extent the findings translate to the associations between stressful experiences and both INT and EXT problems during adolescence. However, given the increasingly well-established link between stressful experiences and EXT problems, and the importance of self-esteem during adolescence more generally, it is important to disentangle the role of self-esteem in the link between stress and EXT problems as well.

Importantly, a basic assumption underlying both the psychosocial model (Brown & Harris, 1978) and the integrated model (Metalsky, Joiner, Hardin, & Abrahamson, 1993) is that the mechanisms are causal. Specifically, self-esteem is proposed to moderate the *effect* of stressful experiences on psychological problems. Whereas this may well be the case, the opposite

might also be true. Specifically, adolescents high on psychological problems may trigger or select situations in which they are at risk of the experience of stressful events, and this link may vary as a function of self-esteem. So far, no studies seem to have examined such a moderation effect of self-esteem. However, earlier longitudinal research has found support for bidirectional associations between stressful experiences and psychological problems during childhood and adolescence (e.g., Laceulle et al., 2014). To examine the moderating role of self-esteem in the (bidirectional) associations between stress and psychological problems, large longitudinal data sets with at least three waves would be required—and even then caution would be needed regarding the interpretation of findings in terms of causality (Hamaker, Kuiper, & Grasman, 2015). In sum, it is crucial to realize that a cross-sectional study like the current project cannot address the issue of causality and that alternative theoretical models may apply instead of or in addition to the models by Brown and Harris (1978) and Metalsky and colleagues (1993). However, research on the moderating role of self-esteem in the relation between stressful experiences and EXT problems is scarce, despite indirect evidence suggesting that self-esteem is strongly linked to both INT and EXT problems (Mann et al., 2004). Moreover, as self-esteem is of crucial importance during adolescence (e.g., Harter & Marold, 1994), exposure to both mild and more severe stressful experiences is common in adolescence (e.g., Laceulle, Nederhof, Karreman, Ormel, & Van Aken, 2012), and many psychological problems have their onset during these years (e.g., Hankin et al., 1998), the interrelations between stressful experiences, self-esteem, and both INT and EXT problems may set the stage for adult life functioning. As such, although caution is needed to not overinterpret cross-sectional findings in terms of causal mechanisms, the current study provides a modest yet first step with regard to our understanding of the relation between stressful experiences, self-esteem, and both INT and EXT problems.

Current Study

Stressful experiences have repeatedly been linked to the development of psychopathology during adolescence and life in general. However, not all adolescents exposed to stressful experiences ultimately develop such problems. Previous research suggests that self-esteem may explain individual differences in the link between stressful experiences and INT problems, but studies examining self-esteem as a moderator are scarce, and nothing is known on these associations with regard to EXT problems. In the current study, we investigated the relations between stressful experiences, self-esteem, and INT and EXT problems. Specifically, we examined whether self-esteem weakens the link between stressful experiences and both INT and EXT psychological problems during adolescence. As such, the current study can be seen as the next step in cross-sectional research by differentiating between two broad domains of psychological problems and examining the moderating role of self-esteem in adolescence. Substantial links are hypothesized with regard to the association between

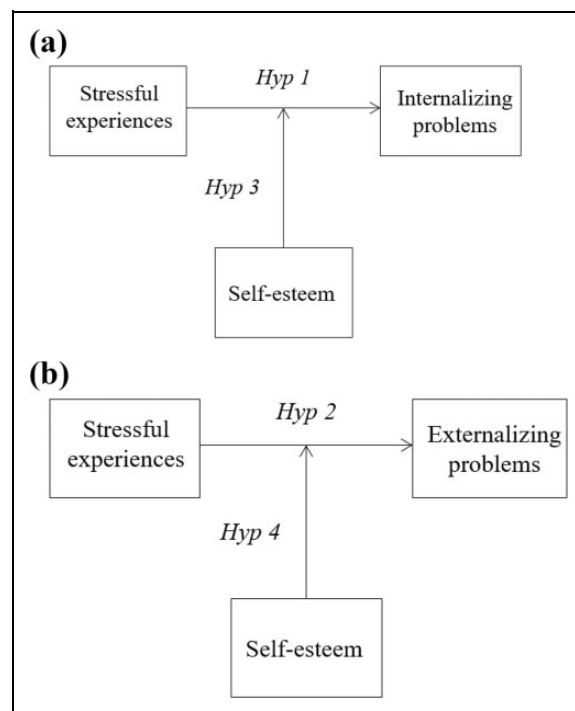


Figure 1. (a) Conceptual model for internalizing symptoms. (b) Conceptual model for externalizing symptoms.

stressful experiences and INT and are expected to be strongest in adolescents with low (compared to high) self-esteem (moderation). A modest association is hypothesized with regard to the link between stressful experiences and EXT. The possible moderating role of self-esteem in this association will be explored. The proposed relations, along with the hypotheses, are visualized in Figure 1.

Method

Sample and Data Collection

Our sample was recruited from six secondary schools throughout the Netherlands via post, telephone, and/or e-mail. In a first letter or e-mail, schools were informed concisely about the study and additionally informed via telephone within several days after receiving the letter or e-mail. In case a school agreed to participate, parents and caretakers received a letter or an e-mail about the participation of their children in the study. In line with the guidelines valid at the time of data collection, parents could inform the school or study principal investigators when they did not want their child to participate (passive consent). Adolescents were informed regarding the study goals and provided written informed consent prior to the start. They were told that they could withdraw at any time and that they could contact the principal investigators of the study both during and after the study. This resulted in a total sample of 750 adolescents. The current study was based on adolescents who had data on psychological problems, self-esteem, and stressful experiences, resulting in a sample of 743 adolescents (47.1% boys

[$N = 353$]) with a mean age of 14.8 ($SD = 1.7$), which is demographically similar to the Dutch population for this age group. Social economic status, as inferred by parents' received education, could be considered slightly above average, with 37% of fathers and mothers having received higher education (as compared to 35% of the Dutch average; Statistics Netherlands, 2013). Furthermore, the distribution of native languages closely mirrored that in the population (e.g., Arabian was the native language of 1.1% of our sample, compared to 1.3% of the total population; Statistics Netherlands, 2016). Data were collected with paper-and-pencil questionnaires in April and May 2015 by at least two undergraduate student assistants. Respondents received a small candy bar as a reward at the end.

Measures

Stressful experiences. Stressful experiences were assessed using an adapted version of the Life Experiences Survey (LES). This measure was originally developed by Sarason, Johnson, and Siegel (1978) and is especially fit to measure stressful experiences as it assesses both the occurrence and the impact of specific experiences. Test–retest reliability was found to be acceptable in prior research (Iwamitsu et al., 2008; Sarason et al., 1978). For the current project, 38 items were assessed. Of these items, we excluded 3 items to avoid potential overlap with the EXT problems items (e.g., “minor lawbreaking behavior”). All items included are experiences that are presumed to be relevant in adolescence and have been used in previous studies (e.g., Laceulle et al., 2012; McMahan et al., 2003). Included events were, among other things: the death or illness of a family member or close friend, school accomplishments or failures, and breaking up with a boy- or girlfriend. Respondents were asked to indicate which events they had experienced and when (0–6 months or 7–12 months prior), and how much of an impact this experience had had on their life. This potential impact was measured on a 7-point Likert-type scale, ranging from -3 (*extremely negative*) to 3 (*extremely positive*). Experiences that were rated by a participant as very negative (-2 or -3) were included for the analyses. Subsequently, an experience variable was constructed, indicating the number of (negative) stressful experiences the adolescent reported. Such a format combining the count of experiences and the severity has been used in several previous studies (e.g., Lüdtke, Roberts, Trautwein, & Nagy, 2011; Troy, Ford, McRae, Zarolia, & Mauss, 2017; Wilburn & Smith, 2005).

Psychological problems. Psychological problems were measured with the Youth Self-Report (YSR) measure of psychopathology (Achenbach, 1991). For this study, we used a shortened version consisting of 62 items, distinguishing between INT and EXT behavior. This adapted version measured five different problem clusters: withdrawn behavior, somatic complaints, anxiety and depression, aggressive behavior, and delinquent behavior. The first three of these clusters can be seen as INT behavior, the latter two as EXT behavior. The item “I talk about suicide” was left out from the questionnaire, as it might be too

taxing for adolescents. Respondents indicated their responses on a 3-point Likert-type scale, ranging from 0 (*not true*) to 2 (*very or often true*). The YSR has been shown to have good reliability for the INT scale and the EXT scale and good validity (Achenbach, 1991; Achenbach & Rescorla, 2001). The adapted version used in the present study was shown to have good validity as well (Verhulst, van der Ende, & Koot, 1997). In the current study, α coefficients were found of .89 for INT symptoms and .85 for EXT symptoms.

Self-esteem. Self-esteem was measured with the Rosenberg Self-Esteem Scale (RSES) with 10 questions (Rosenberg, 1965). The RSES uses a 4-point Likert-type scale, ranging from 1 (*doesn't fit me at all*) to 4 (*fits me well*). Acceptable reliability and validity were reported in earlier studies (Rosenberg, 1965; Sinclair et al., 2010). In the current study, Cronbach's α was .85.

Statistical Analyses

Data preparation was performed in IBM SPSS Version 20.0. All regression analyses were conducted in the “lavaan” R package (Rosseel, 2012). Descriptive statistics of age, socioeconomic status (SES), self-esteem, stressful experiences, and INT and EXT problems were calculated in terms of means, standard deviations, and correlations. Frequencies were calculated for sex and stressful experiences. The regression analyses were conducted using latent variables for self-esteem and INT and EXT (Westfall & Yarkoni, 2016). Because interaction is not possible with unobserved variables, the Kenny and Judd's (1984) approach was used to create product terms of the latent indicators, which was implemented with the semTools package (semTools Contributors, 2016). The resulting product terms were then entered as indicators of the interaction term. Appropriate constraints were added to the model syntax. All analyses were controlled for sex and SES. Given our sample size of 743, a probability level of .05, and power of .80, our analyses were able to detect effects as small as .015.

Results

Descriptive information of the study variables is reported in Table 1. Correlations between stressful experiences, INT and EXT problems, and self-esteem are reported in Table 2 and show relations in the expected directions.

INT Problems

All path estimates for the analyses with INT problems are reported in Table 3. A model with sex and SES was first fit to the data, explaining 5.3% of the variance in INT problems. We next fit a model including the stressful experiences, self-esteem, and an interaction term (i.e., Stressfulexperiences \times Self-Esteem), which explained 42.6% of the variance in INT. In this model, stressful experiences were positively linked to INT, indicating that adolescents who reported more stressful experiences also scored higher on INT problems. Both self-

Table 1. Descriptive Statistics.

Variables	Mean/ N	Standard Deviation (%)	Minimum to Maximum
Age (years)	14.8	1.7	11–17
Sex (female)	386	51.4	
SES (standardized)	0	1	–3–1
Self-esteem	31.6	5.6	14–40
Internalizing problems	9.9	7.9	0–50
Externalizing problems	8.3	6.6	0–58
Stressful experiences sum score	0.9	1.8	0–24
Stressful experiences (0)	417	(55.5%)	
(1)	165	(22.0%)	
(2)	87	(11.6%)	
(>2)	74	(10.0%)	

Note. SES = socioeconomic status.

Table 2. Correlation Coefficients.

Variables	Internalizing Problems	Self- Esteem	Stressful Experiences	Externalizing Problems
Internalizing problems	1.00			
Self-esteem	–0.56**	1.00		
Stressful experiences	0.29**	–0.19**	1.00	
Externalizing problems	0.30**	–0.13**	0.25**	1.00

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

Table 3. Regression Analysis of Internalizing Problems on Stressful Experiences and Self-Esteem.

Independent Variables	B	SE	β	p	[LLCI, ULCI]
Stressful experiences	.15	.04	1.10	<.001	[.07, .23]
Self-esteem	–.18	.03	–0.60	<.001	[–.23, –.13]
Stressful Experiences \times Self-Esteem	–.04	.01	–0.94	.001	[–.06, –.02]

Note. All analyses were controlled for sex and SES. SES = socioeconomic status; LLCI and ULCI = 95% lower limit and upper limit confidence interval.

esteem and the interaction term were negatively linked to INT, suggesting that adolescents who scored lower on self-esteem also reported more stressful experiences. In addition, a higher score on self-esteem weakened the relation between stressful experiences and INT problems. The interaction is illustrated in Figure 2, in which we see the relation between stressful experiences and psychological problems for adolescents with low self-esteem ($M - SD$) and adolescents with high self-esteem ($M + SD$). Note that these groups were created solely for the purpose of illustration and were not used for the analyses. Moreover, for reasons of clarity, the interaction effect is illustrated for the nonlatent scores.

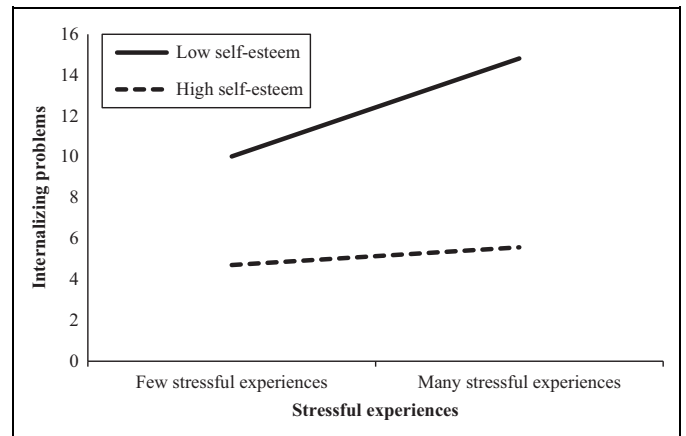


Figure 2. The interaction effect has been illustrated for internalizing problems in the graph for a group with few stressful experiences ($M - SD$) and for a group with many stressful experiences ($M + SD$), controlled for sex and socioeconomic status.

Table 4. Regression Analysis of Externalizing Problems on Stressful Experiences and Self-Esteem.

Independent Variables	B	SE	β	p	[LLCI, ULCI]
Stressful experiences	.16	.05	1.03	.001	[.07, .26]
Self-esteem	–.05	.02	–0.15	.006	[–.09, –.02]
Stressful Experiences \times Self-Esteem	–.04	.02	–0.84	.007	[–.07, –.01]

Note. All analyses were controlled for sex and SES. SES = socioeconomic status; LLCI and ULCI = 95% lower limit and upper limit confidence interval.

EXT Problems

Path estimates for the analyses with EXT problems are reported in Table 4. We first fit a model with only the control variables (i.e., sex and SES) to the data. This model explained 7.2% of the variance in EXT. Next, the model was expanded with stressful experiences, self-esteem, and an interaction term. This latter model explained 21.1% of the variance in EXT. Similar to the link with INT problems, stressful experiences were positively related to EXT, indicating that adolescents who reported more experiences also scored higher on EXT problems. Self-esteem and the interaction term were linked negatively to EXT, suggesting that adolescents with a low score on self-esteem reported more EXT problems. Additionally, a higher score on self-esteem weakened the relation between stressful experiences and EXT problems. The interaction was less strong than the interaction found for INT problems. The interaction for EXT problems is illustrated in Figure 3.

Post Hoc Analyses

To test the robustness of the findings, we reran our analyses with small adjustments. Specifically, we ran the following post hoc analyses: (1) including neuroticism as a covariate, (2) excluding all covariates, (3) excluding stressful experiences

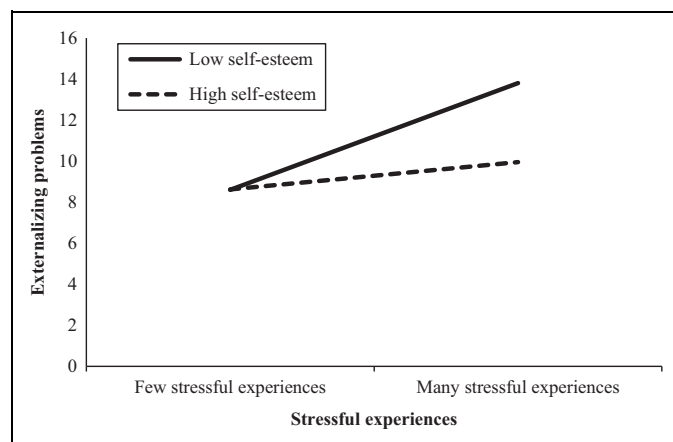


Figure 3. The interaction effect has been illustrated for externalizing problems in the graph for a group with few stressful experiences ($M - SD$) and for a group with many stressful experiences ($M + SD$), controlled for sex and socioeconomic status.

outliers, (4) using alternative decision rules for determining stressful experiences, and (5) excluding overlapping items between the YSR and RSES. Findings suggested that the original results of the study were generally robust to small alternations to the statistical model. However, removing covariates rendered the direct link between self-esteem and EXT problems insignificant, and using an alternative threshold for stressful experiences resulted in an insignificant moderation effect of self-esteem in the relation with EXT. The results of the analyses are reported in the Supplemental Material.

Discussion

In the current study, we examined the link between stressful experiences and psychological problems in two major domains: INT and EXT problems. In addition, we studied whether high self-esteem weakened these links.

Stressful Experiences and Psychological Problems

Adolescents who reported more stressful experiences were more likely to report INT problems. This finding supports our first hypothesis and fits well into the framework of findings of existing literature (Laceulle et al., 2014; Waaktaar et al., 2004). Secondly, we found that adolescents who reported more stressful experiences also reported more EXT problems. This confirms our second hypothesis and is also in agreement with earlier findings in the literature (Powell, Lochman, & Boxmeyer, 2007; Suldo & Huebner, 2004). In contrast to our expectations, we found the relationship to be about equally strong for INT and EXT. As most research so far has been conducted in adult populations (Kraaij, Arensman, & Spinhoven, 2002; Paykel, 2003; Tiet et al., 2001), it is possible that the similar strength of the relationship is specific to adolescence. This seems plausible, as previous research has shown that there are adolescent-specific EXT problems, which are more temporary in nature than those found in adults (Moffitt, 1993). Possibly,

often temporary adolescence-specific problems are related to stressful experiences, whereas the more life-course-persistent EXT problems found in adults are not so much. Whereas research comparing an adolescent and an adult population is needed to test this empirically, it may well explain why the effect size for EXT was similar to the one for INT in the current study.

Moderating Effect of Self-Esteem

Findings revealed that the relation between stressful experiences and INT problems was weaker for adolescents with high self-esteem, which confirms our third hypothesis. Self-esteem was also found to moderate the relationship between stressful experiences and EXT problems, and contrary to our expectations, this moderation effect was not stronger for INT than for EXT problems. Since few studies have examined the relationship with EXT problems in adolescence, this finding broadens our understanding of EXT problems and their relation to stressful experiences and self-esteem.

Importantly, the moderation found might point to a buffering effect of self-esteem, as was first proposed by Brown and Harris (1978) in the context of depression and later studied by other researchers (e.g., Miller, Kreitman, Ingham, & Sashidharan, 1989; Moksnes et al., 2010; Southall & Roberts, 2002) in the broader context of INT problems. The present findings move beyond this previous work by showing that self-esteem also plays a role in explaining individual differences in the relationship between stressful experiences and EXT problems. This is intriguing, as self-esteem has often been assumed to be more strongly related to the INT domain (e.g., Deković, 1999). The present findings contest this assumption and suggest that self-esteem may play an important role in the relation between stressful experiences and EXT.

However, the buffering model assumes a specific direction of effects, and the cross-sectional nature of the current study makes it impossible to test any causal hypotheses. Future research should examine the associations described in the current study in a longitudinal setting to determine the direction of the links and rule out the possibility of alternative models underlying the results. For instance, some recent literature has argued that the relationship between stressful experiences and psychological problems might be reciprocal (Kim, Conger, Elder, & Lorenz, 2003; Laceulle et al., 2014; Timmermans, van Lier, & Koot, 2010), indicating that stressful experiences lead to more psychological problems and that psychological problems also lead to experiencing more stressful experiences. Moreover, some studies have found a mediating role of self-esteem in the relationship between stressful experiences and INT and EXT problems (Cheng & Lam, 1997; Haine et al., 2003). That is, stress may cause self-esteem to decrease, which in turn causes an increase in psychopathology. In future research, it might be interesting to see whether both roles of self-esteem can be found.

Alternatively, it is possible that a third variable can explain the reported associations. Findings from previous research

suggest that neuroticism might confound the relations between stressful experiences, self-esteem, and INT and EXT problems, as neuroticism has been found to be related to both stressful experiences and psychopathology (Ormel, Rosmalen, & Farmer, 2004), as well as to low self-esteem (e.g., Robins, Hendin, Trzesniewski, 2001). In the present study, the robustness of the findings was not affected by including neuroticism in our post hoc analyses, suggesting that these relations are independent of an individual's score on neuroticism. However, there are other factors that might play a role, such as coping mechanisms and social support (Grant et al., 2006). Future research should attempt to tease apart the constructs of stressful experiences, self-esteem, and INT and EXT problems, as well as any potential confounders, over time.

Random intercepts cross-lagged panel modeling, an elegant alternative to panel models which accounts for trait-like stability and partials out between-person variance (Hamaker et al., 2015), may for instance be used to examine these relations longitudinally. With this technique, it is possible to estimate the effects of stressful experiences, self-esteem, and INT and EXT problems over time to determine the direction of the relations and even to examine the possibility of reciprocity.

Finally, it is important to note that in contrast to the strong effects found in adversity literature (e.g., Kessler et al., 2010), the small effect sizes of common stressful experiences might accumulate and together with low self-esteem contribute to psychological problems. The small effect sizes found in this line of research are quite common (e.g., Laceulle et al., 2014; Suldo & Huebner, 2004) and, in fact, desirable, as it indicates that adolescents are relatively resilient to the negative correlates and consequences of negative experiences.

Strengths and Limitations

The current study made use of a relatively large sample that was demographically similar to the Dutch population and covered all of adolescence. This strengthens our confidence in the generalizability of the findings to other Dutch adolescents. Confidence in the study's results is further strengthened by the addition of post hoc robustness checks (e.g., rerunning our analyses excluding all covariates, excluding overlapping items between the YSR and RSES), in which most of the studied relations remained unchanged. Moreover, the use of the LES provided not only information on whether or not an event had occurred but also on the subjective experience of the participant, making it particularly fit to test the influence of events that are experienced by the adolescent as stressful. Of course, like any questionnaire, the LES provides only a selection of experiences, but we believe the addition of examining the influence allowed us to capture the subjective experience of the participants.

In addition to the items included in the LES, some other issues need to be mentioned. In the current study, a measure of stressful experiences was used that combined the impact and number of stressful experiences reported by adolescents. Although this combined approach of impact and number of

stressful experiences has been used in previous studies (Lüdtke et al., 2011; Troy et al., 2017; Wilburn & Smith, 2005), it could be argued that the way stressful experiences are measured may affect the results (e.g., Monroe, 2008). To deal with this issue, we have rerun our analyses with a different threshold (i.e., including all stressful experiences that were rated -1 or lower). Doing so resulted in smaller β s for the examined relations and rendered the association between the interaction term and EXT problems insignificant. This suggests that results are indeed somewhat dependent on the threshold chosen to indicate stressful experiences; although including mildly stressful experiences still resulted in finding significant relations between stressful experiences and INT and EXT problems, the effect sizes of these relations were larger when only taking very stressful experiences into account. Future research with a greater sample size should focus on disentangling the effects of the reported impact and number of stressful experiences, and the impact the choice of measure has on the links with self-esteem and psychological problems.

Moreover, and as discussed throughout this article, while the current study extends previous cross-sectional research by examining the role of self-esteem in the link between both INT and EXT, longitudinal research is needed to disentangle directionality. Finally, it could be argued that several of the items on the RSES and the YSR overlap, which would partly explain the relationship between self-esteem and INT symptoms. To test this possibility, we removed 2 items from the YSR that showed overlap with the RSES in a post hoc analysis. Results from this analysis did not meaningfully differ from those of the original analyses, suggesting that the relation between self-esteem and INT problems cannot be explained by overlap in items.

Conclusion

The current study confirms and extends previous cross-sectional research by showing that stressful experiences during adolescence are related to both INT and EXT problems. Moreover, the findings add to the literature by disentangling the role of self-esteem in the respective associations. Low self-esteem can strengthen the link between stressful experiences and both INT and EXT problems. Post hoc analyses supported the robustness of the various findings. Together, the results emphasize the importance of (1) addressing EXT along with INT problems in the context of stressful experiences and (2) taking individual differences into account in the study of stressful experiences and psychological problems.

Declaration of Conflicting Interests

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References

- Abela, J. R., Webb, C. A., Wagner, C., Ho, M. H., & Adams, P. (2006). The role of self-criticism, dependency, and hassles in the course of depressive illness: A multiwave longitudinal study. *Personality and Social Psychology Bulletin, 32*, 328–338.
- Achenbach, T. M. (1966). The classification of children's psychiatric symptoms: A factor-analytic study. *Psychological Monographs, 80*, 1–37. doi:10.1037/h0093906
- Achenbach, T. M. (1991). *Manual for the YSR and 1991 profile*. Burlington: Department of Psychiatry, University of Vermont.
- Achenbach, T. M., & Edelbrock, C. S. (1978). The classification of child psychopathology: A review and analysis of empirical efforts. *Psychological Bulletin, 85*, 1275–1301. doi:10.1037/0033-2909.85.6.1275
- Achenbach, T. M., & Rescorla, L. (2001). *The manual for the ASEBA school-age forms and profiles*. Burlington: Research Center for Children, Youth, and Families, University of Vermont.
- Bernstein, G. A., Borchardt, C. M., & Perwien, A. R. (1996). Anxiety disorders in children and adolescents: A review of the past 10 years. *Journal of the American Academy of Child & Adolescent Psychiatry, 35*, 1110–1119.
- Brown, G. W., Andrews, B., Bifulco, A., & Veiel, H. (1990). Self-esteem and depression: I. Measurement issues and prediction of onset. *Social Psychiatry and Psychiatric Epidemiology, 25*, 200–209. doi:10.1007/BF00788643
- Brown, G. W., Bifulco, A., & Andrews, B. (1990). Self-esteem and depression: III. Aetiological issues. *Social Psychiatry and Psychiatric Epidemiology, 25*, 235–243. doi:10.1007/BF00788644
- Brown, G. W., & Harris, X. (1978). *Social origins of depression*. New York, NY: Free Press.
- Brown, G. W., Harris, T. O., & Peto, J. (1973). Life events and psychiatric disorders Part 2: Nature of causal link. *Psychological Medicine, 3*, 159–176. doi:10.1017/S0033291700048492
- Cheng, S. K., & Lam, D. J. (1997). Relationships among life stress, problem solving, self-esteem, and dysphoria in Hong Kong adolescents: Test of a model. *Journal of Social and Clinical Psychology, 16*, 343–355. doi:10.1521/jscp.1997.16.3.343
- Cicchetti, D., & Toth, S. L. (1991). A developmental perspective on internalizing and externalizing disorders. In D. Cicchetti & S. L. Toth (Eds.), *Internalizing and externalizing expressions of dysfunction* (pp. 1–19). New York, NY: Lawrence Erlbaum.
- Cicchetti, D., & Toth, S. L. (Eds.). (1997). *Developmental perspectives on trauma: Theory, research and intervention*. Rochester, NY: Rochester University Press.
- Collins, W. A., Maccoby, E., Steinberg, L., Hetherington, E. M., & Bornstein, M. (2000). Contemporary research on parenting: The case for nature and nurture. *American Psychologist, 55*, 218–232. doi:10.1037/0003-066X.55.2.218
- Dahl, R. E. (2004). Adolescent brain development: A period of vulnerabilities and opportunities. *Annals of the New York Academy of Sciences, 1021*, 1–22. doi:10.1196/annals.1308.001
- Deković, M. (1999). Risk and protective factors in the development of problem behavior during adolescence. *Journal of Youth and Adolescence, 28*, 667–685.
- Grant, K. E., Compas, B. E., Thurm, A. E., McMahon, S. D., Gipson, P. Y., Campbell, A. J., . . . Westerholm, R. I. (2006). Stressors and child and adolescent psychopathology: Evidence of moderating and mediating effects. *Clinical Psychology Review, 26*, 257–283. doi:10.1016/j.cpr.2005.06.011
- Haine, R. A., Ayers, T. S., Sandler, I. N., & Weyer, S. A. (2003). Locus of control and self-esteem as stress-moderators or stress-mediators in parentally bereaved children. *Death Studies, 27*, 619–640. doi:10.1080/07481180302894
- Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. P. (2015). A critique of the cross-lagged panel model. *Psychological Methods, 20*, 102–116.
- Hankin, B. L., Abramson, L. Y., Moffitt, T. E., Silva, P. A., McGee, R., & Angell, K. E. (1998). Development of depression from preadolescence to young adulthood: Emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology, 107*, 128–140. doi:10.1037/0021-843X.107.1.128
- Hankin, B. L., Mermelstein, R., & Roesch, L. (2007). Sex differences in adolescent depression: Stress exposure and reactivity models. *Child Development, 78*, 279–295. doi:10.1111/j.1467-8624.2007.00997.x
- Harter, S. (2006). The development of self-esteem. In M. H. Kernis (Ed.), *Self-esteem issues and answers: A sourcebook of current perspectives* (pp. 144–150). New York, NY: Psychology Press.
- Harter, S., & Marold, D. B. (1994). The directionality of the link between self-esteem and affect: Beyond causal modeling. In D. Cicchetti & S. L. Toth (Eds.), *Rochester symposium on developmental psychopathology* (Vol. 5, pp. 333–369). Rochester, NY: University of Rochester Press.
- Harter, S., & Whitesell, N. R. (1996). Multiple pathways to self-reported depression and psychological adjustment among adolescents. *Development and Psychopathology, 8*, 761–777.
- Iwamitsu, Y., Yasuda, H., Kamiya, M., Wada, M., Nakajima, K., Ando, N., . . . Takemura, K. (2008). Reliability and validity of the Japanese version of the Life Experiences Survey. *Japanese Journal of Stress Science, 23*, 239–249.
- Kenny, D. A., & Judd, C. M. (1984). Estimating the nonlinear and interactive effects of latent variables. *Psychological Bulletin, 96*, 201–210.
- Kessler, R. C., McLaughlin, K. A., Green, J. G., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., . . . Benjet, C. (2010). Childhood adversities and adult psychopathology in the WHO World Mental Health Surveys. *The British Journal of Psychiatry, 197*, 378–385. doi:10.1192/bjp.bp.110.080499
- Kim, K. J., Conger, R. D., Elder, G. H., Jr., & Lorenz, F. O. (2003). Reciprocal influences between stressful life events and adolescent internalizing and externalizing problems. *Child Development, 74*, 127–143. doi:10.1111/1467-8624.00525
- Kraaij, V., Arensman, E., & Spinhoven, P. (2002). Negative life events and depression in elderly persons: A meta-analysis. *Journal*

- of *Gerontology: Psychological Sciences*, 57, 87–94. doi:10.1093/geronb/57.1.P87
- Krueger, R. F., Caspi, A., Moffitt, T. E., & Silva, P. A. (1998). The structure and stability of common mental disorders (*DSM-III-R*): A longitudinal-epidemiological study. *Journal of Abnormal Psychology*, 107, 216–227. doi:10.1037/0021-843X.107.2.216
- Krueger, R. F., Johnson, W., & Kling, K. C. (2006). Behavior genetics and personality development. In D. Mroczek & T. Little (Eds.), *Handbook of personality development* (pp. 81–108). Mahwah, NJ: Lawrence Erlbaum.
- Laceulle, O. M., Nederhof, E., Karreman, A., Ormel, J., & Van Aken, M. A. G. (2012). Stressful events and temperament change during early adolescence and middle adolescence: The TRAILS study. *European Journal of Personality*, 26, 276–284.
- Laceulle, O. M., O'Donnell, K., Glover, V., O'Connor, T. G., Ormel, J., van Aken, M.A., & Nederhof, E. (2014). Stressful events and psychological difficulties: Testing alternative candidates for sensitivity. *European Child & Adolescent Psychiatry*, 23, 103–113. doi:10.1007/s00787-013-0436-4
- Lewinsohn, P. M., Steinmetz, J. L., Larson, D. W., & Franklin, J. (1981). Depression-related cognitions: Antecedent or consequence? *Journal of Abnormal Psychology*, 90, 213–219. doi:10.1037/0021-843X.90.3.213
- Lütke, O., Roberts, B. W., Trautwein, U., & Nagy, G. (2011). A random walk down university avenue: Life paths, life events, and personality trait change at the transition to university life. *Journal of Personality and Social Psychology*, 101, 620–637.
- Mann, M., Hosman, C. M. H., Schaalma, H. P., & De Vries, N. K. (2004). Self-esteem in a broad-spectrum approach for mental health promotion. *Health Education Research*, 19, 357–372.
- McMahon, S. D., Grant, K. E., Compas, B. E., Thurm, A. E., & Ey, S. (2003). Stress and psychopathology in children and adolescents: Is there evidence of specificity? *Journal of Child Psychology and Psychiatry*, 44, 107–133. doi:10.1111/1469-7610.00105
- Metalsky, G. I., Joiner, T. E., Hardin, T. S., & Abramson, L. Y. (1993). Depressive reactions to failure in a naturalistic setting: A test of the hopelessness and self-esteem theories of depression. *Journal of Abnormal Psychology*, 102, 101–109. doi:10.1037/0021-843X.102.1.101
- Miller, P. McC., Kreitman, N. B., Ingham, J. G., & Sashidharan, S. P. (1989). Self-esteem, life stress and psychiatric disorder. *Journal of Affective Disorders*, 17, 65–75. doi:10.1016/0165-0327(89)90025-6
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, 100, 674–701. doi:10.1037/0033-295X.100.4.674
- Moksnes, U. K., Moljord, I. E., Espnes, G. A., & Byrne, D. G. (2010). The association between stress and emotional states in adolescents: The role of gender and self-esteem. *Personality and Individual Differences*, 49, 430–435. doi:10.1016/j.paid.2010.04.012
- Monroe, S. M. (2008). Modern approaches to conceptualizing and measuring human life stress. *Annual Review of Clinical Psychology*, 4, 33–52. doi:10.1146/annurev.clinpsy.4.022007.141207
- Ormel, J., Rosmalen, J., & Farmer, A. (2004). Neuroticism: A non-informative marker of vulnerability to psychopathology. *Social Psychiatry and Psychiatric Epidemiology*, 39, 906–912.
- Orth, U., Robins, R. W., & Meier, L. L. (2009). Disentangling the effects of low self-esteem and stressful events on depression: Findings from three longitudinal studies. *Journal of Personality and Social Psychology*, 97, 307–321. doi:10.1037/a0015645
- Osvath, P., Vörös, V., & Fekete, S. (2004). Life events and psychopathology in a group of suicide attempters. *Psychopathology*, 37, 36–40. doi:10.1159/000077018
- Paykel, E. S. (2003). Life events and affective disorders. *Acta Psychiatrica Scandinavica*, 108, 61–66. doi:10.1034/j.1600-0447.108.s418.13.x
- Powell, N. R., Lochman, J. E., & Boxmeyer, C. L. (2007). The prevention of conduct problems. *International Review of Psychiatry*, 19, 596–605.
- Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin*, 27, 151–161.
- Robinson, N. S., Garber, J., & Hilsman, R. (1995). Cognitions and stress: Direct and moderating effects on depressive versus externalizing symptoms during the junior high school transition. *Journal of Abnormal Psychology*, 104, 453–463. doi:10.1037//0021-843X.104.3.453
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48, 1–36. Retrieved from <http://www.jstatsoft.org/v48/i02/>
- Rudolph, K. D., Hammen, C., Burge, D., Lindberg, N., Herzberg, D., & Daley, S. E. (2000). Toward an interpersonal life-stress model of depression: The developmental context of stress generation. *Development and Psychopathology*, 12, 215–234.
- Rydell, A. M. (2010). Family factors and children's disruptive behaviour: An investigation in links between demographic characteristics, negative life events and symptoms of ODD and ADHD. *Social Psychology and Psychiatric Epidemiology*, 45, 233–244. doi:10.1007/s00127-009-0060-2
- Sarason, I. G., Johnson, J. H., & Siegel, J. M. (1978). Assessing the impact of life changes: Development of the Life Experiences Survey. *Journal of Consulting and Clinical Psychology*, 46, 932–946. doi:10.1037/0022-006X.46.5.932
- semTools Contributors. (2016). semTools: Useful tools for structural equation modeling. R package version 0.4-14. Retrieved from <http://cran.r-project.org/web/packages/semTools/index.html>
- Sinclair, S. J., Blais, M. A., Gansler, D. A., Sandberg, E., Bistis, K., & LoCicero, A. (2010). Psychometric properties of the Rosenberg self-esteem scale: Overall and across demographic groups living within the United States. *Evaluation & the Health Professions*, 33, 56–80. doi:10.1177/0163278709356187
- Southall, D., & Roberts, J. E. (2002). Attributional style and self-esteem in vulnerability to adolescent depressive symptoms following life stress: A 14-week prospective study. *Cognitive Therapy and Research*, 26, 563–579. doi:10.1023/A:1020457508320

- Statistics Netherlands (2013, October 13). Onderwijsniveau bevolking gestegen [In Dutch] [Dutch population better educated]. *Statistics Netherlands*. Retrieved from <https://www.cbs.nl/nl-nl/nieuws/2013/40/onderwijsniveau-bevolking-gestegen>
- Statistics Netherlands (2016, May 30). Bevolking: generatie, geslacht, leeftijd en herkomstgroepering, 1 januari [In Dutch] [Population; generation, gender, age and origin, January 1]. *Statistics Netherlands*. Retrieved from <http://statline.cbs.nl/StatWeb/publication/?DM=SLNL&PA=37325&D1=0&D2=0&D3=0&D4=0&D5=a&D6=l&VW=T>
- Suldo, S. M., & Huebner, E. S. (2004). Does life satisfaction moderate the effects of stressful life events on psychopathological behavior during adolescence? *School Psychology Quarterly*, *19*, 93–105. doi:10.1521/scpq.19.2.93.33313
- Tiet, Q. Q., Bird, H. R., Hoven, C. W., Moore, R., Wu, P., Wicks, J., . . . Cohen, P. (2001). Relationship between specific adverse life events and psychiatric disorders. *Journal of Abnormal Child Psychology*, *29*, 153–164. doi:10.1023/A:1005288130494
- Timmermans, M., van Lier, P. A., & Koot, H. M. (2010). The role of stressful events in the development of behavioural and emotional problems from early childhood to late adolescence. *Psychological Medicine*, *40*, 1659–1668. doi:10.1017/S0033291709992091
- Troy, A. S., Ford, B. Q., McRae, K., Zorola, P., & Mauss, I. B. (2017). Change the things you can: Emotion regulation is more beneficial for people from lower than from higher socioeconomic status. *Emotion*, *17*, 141–154.
- Verhulst, F., Van der Ende, J., & Koot, H. M. (1997). Handleiding voor de youth self report (YSR) [Manual for the youth self-report (YSR)]. Rotterdam, the Netherlands: Erasmus University/Department of Child and Adolescent Psychiatry, Sophia Children's Hospital.
- Waaktaar, T., Borge, A. I., Fundingsrud, H. P., Christie, H. J., & Torgersen, S. (2004). The role of stressful life events in the development of depressive symptoms in adolescence—A longitudinal community study. *Journal of Adolescence*, *27*, 153–163.
- Westfall, J., & Yarkoni, T. (2016). Statistically controlling for confounding constructs is harder than you think. *PloS One*, *11*, e0152719.
- Wilburn, V. R., & Smith, D. E. (2005). Stress, self-esteem, and suicidal ideation in late adolescents. *Adolescence*, *40*, 33–45.

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