

**Investigating negative life events, externalizing behavioural problems among adolescents
and the influence of the environment**

Elsemieke van Belzen (4125274)

Supervising lecturer: Margot Peeters

Second assessor: Catrin Finkenauer

Youth Studies

June 2018

Abstract

Previous research has shown that there exists a relation between negative life events and externalizing behavioural problems among adolescents. This relation might be weakened by potential buffers. This study examined whether negative life events (T2) was a predictor for externalizing behavioural problems among adolescents (T3). This study also studied whether SES and peer support could be potential buffers in the relation between negative life events and externalizing behavioural problems among adolescents. Longitudinal data of TRAILS at wave 1, wave 2 and wave 3 was used ($N = 2230$, 49.2% boys, $M_{ageT1} = 11.11$, $SD = .55$).

There was no relation between negative life events and externalizing behavioural problems among adolescents. Besides, peer support and SES were not significant moderators in the relation between negative life events and externalizing behavioural problems. These results are not in line with the proposed hypotheses. Nevertheless, this study provides starting points for future research and implications, such as studying the hypothesized relations of the current study at a later age.

Keywords: negative life events, externalizing behavioural problems, adolescence, SES, peer support

Abstract

Voorgaand onderzoek heeft laten zien dat er een relatie bestaat tussen negatieve levenservaringen en externaliserend probleemgedrag bij adolescenten. Deze relatie kan mogelijk worden verzwakt door potentiële buffers. Deze studie heeft onderzocht of negatieve levenservaringen (T2) een voorspeller was voor externaliserend probleemgedrag bij adolescenten (T3). Daarnaast heeft deze studie onderzocht of SES en peer support potentiële buffers konden zijn in de relatie tussen negatieve levenservaringen en externaliserend probleemgedrag bij adolescenten. Er is gebruik gemaakt van longitudinale data van TRAILS op wave 1, wave 2 en wave 3 ($N = 2230$, 49.2% boys, $M_{ageT1} = 11.11$, $SD = .55$). Er is geen relatie gevonden tussen negatieve levenservaringen en externaliserend probleemgedrag bij adolescenten. Daarnaast waren peer support en SES geen significante moderators in de relatie tussen negatieve levenservaringen en externaliserend probleemgedrag bij adolescenten. Deze resultaten zijn niet in lijn met de vooraf opgestelde hypotheses. Desondanks geeft deze studie aanknopingspunten voor vervolgonderzoek en implicaties, zoals de hypotheses van de huidige studie te onderzoeken op een latere leeftijd.

Trefwoorden: negatieve levenservaringen, externaliserend probleemgedrag, adolescentie, SES, peer support

Negative life events, such as the death or illness of a parent, are for some adolescents more common events than for other adolescents. Negative life events can be defined as events that lead to changes in an average person's normal routine (Kobasa, 1979). Examples of negative life events are: the death of a family member, illness of an important person in the environment, divorce of parents or the discharge of a parent (Masuda & Holmes, 1978). Negative life events can increase externalizing behavioural problems among adolescents (Kim, Conger, Elder & Lorenz, 2003). Externalizing behavioural problems are defined as 'behaviours which bring the child into conflict with others (e.g., rule-breaking, aggressive behaviour and ADHD'; Oldehinkel, Hartman, De Winter, Veenstra, & Ormel, 2004). During adolescence there are many changes in a fast pace. During this period, adolescents are more vulnerable for developing externalizing behavioural problems after they have experienced negative life events. Several studies are suggesting that negative life events, such as the death of a parent or divorce, can increase externalizing behavioural problems among adolescents (Bergman, Axberg & Hanson, 2017; Low et al., 2012). Negative life events in adolescence can even predict externalizing behavioural problems in later life (March-Llanes et al., 2017).

There are few studies about the relationship between negative life events and externalizing behavioural problems among adolescents (Amone-P'Olak, Ormel, Huisman, Verhulst, Oldehinkel, and Burger, 2009; Kim et al., 2003). Moreover, several interacting variables could be moderators in the relation between negative life events and externalizing behavioural problems among adolescents. These moderators could act as protective buffers, in the relation between negative life events and externalizing behavioural problems among adolescents. For instance, peer support and socioeconomic status (SES) both have been related to negative life events and to externalizing behavioural problems among adolescents (Steinhausen & Metzke, 2001; Reiss, 2013). This study will investigate whether there is a relation between negative life events and externalizing behaviour and in this way, replicate other studies that investigated this relation already (Kim et al., 2003; Amone-P'Olak et al., 2009). However, this study will also look at specific and potential moderators, such as high SES and peer support, which is something that has not been done in previous studies investigating the relation between negative life events and externalizing behavioural problems among adolescents.

Negative life events and externalizing behavioural problems among adolescents

The *diathesis stress model* (Zuckermann, 1999) states that some adolescents have characteristics that make them more vulnerable to stressors, such as negative life events, in their environment. This vulnerability is a result of an interaction between biological

characteristics (such as temperament), specific personally characteristics (such as impulsivity) of an adolescent and stressors, such as a negative life event (Stoltz, Beijers, Smeekens & Dekovic, 2017). These vulnerable characteristics could be triggered by a negative life event. Compared to peers without these vulnerable characteristics, adolescents whom experience negative life events might be more likely to demonstrate behavioural problems, such as uncontrolled or antisocial behaviours.

This theoretical assumption has been supported by empirical findings. In the study of Kim et al. (2003), the authors found that more negative life events predicted externalizing behavioural problems among adolescents. This finding agrees with the diathesis stress model, which states that negative life events could lead to externalizing behavioural problems. A strength of this study is the longitudinal design, which assumes that negative life events predict externalizing behavioural problems. However, Kim et al. (2003) did not investigate specific and potential moderators in the relation between negative life events and externalizing behavioural problems. It is important to investigate specific and potential moderators, because they might weaken the relation between negative life events and the development of externalizing behavioural problems. In another study, Bergman, Axberg and Hanson (2017) found in a systematic review that the authors state that the death of a parent, as a negative life event, could increase the chance of externalizing behaviour among children. When children do not have a buffer, such as support from family members after the death of a parent, children are more vulnerable and the chance increases that they develop externalizing behavioural problems. Although the study of Bergman, Axberg and Hanson (2017) is done among children, negative life events could increase the chance for externalizing behavioural problems for adolescents as well. Thereby, in a cross-sectional study of Meijer, Van Oostveen and Stams (2008), the authors found a correlation between informal care from adolescents towards their ill parent and the development of externalizing behavioural problems. It is hard for an adolescent to have an ill parent and thereby to take care of that ill parent. In this way, adolescents are more vulnerable and it might be more likely for these adolescents to develop externalizing behavioural problems. Translated to the current study, it might be more likely that an adolescent develops externalizing behavioural problems after or during experiencing a negative life event, such as having and taking care of an ill parent. In the study of Meijer, Oostveen and Stams (2008), externalizing behavioural problems are measured after one specific negative life event. In the current study, multiple negative life events are included to analyse whether these events predict externalizing behavioural problems.

To summarize, the diathesis stress model (Zuckermann, 1999) and the results above

indicate that negative life events could trigger the development of externalizing behavioural problems among adolescents. The chance of developing externalizing behavioural problems, due to negative life events, increases when an adolescent is more vulnerable for negative life events. Based on the results above, it is expected that negative life events could increase externalizing behavioural problems among adolescents.

Interacting influences

Besides individual influences, there are many influences in the direct and indirect environment of an adolescent which could impact the relation between negative life events and externalizing behavioural problems. According to the ecological model of Bronfenbrenner (1986), the environment of an adolescent interacts with several factors within one's microsystem. This microsystem includes for instance parents, peers and SES. Besides, in this model a mesosystem exists, which takes care of the interactions in an adolescent's microsystem. These different systems interact with each other during the life of an adolescent (due to the mesosystem) and could reinforce or weaken factors that happen in adolescent's lives, such as negative life events. Based on the ecological model of Bronfenbrenner (1986), peer support and high SES are included in the current study as possible buffers who can weaken the relation between negative life events and externalizing behavioural problems among adolescents.

Peer support. In the study of Allen, Kern, Vella-Brodrick, Hattie and Waters (2016), the authors define peer support as “trust and closeness with friends and peers; whereas supportive peers offer social as well as academic encouragement and can foster a sense of care and acceptance” (p. 5). Peers become more important in adolescence and acceptance by a peer group gives an adolescent a feeling of belongingness (Sentse, Lindenberg, Omvlee, Ormel & Veenstra, 2010). According to the ecological model of Bronfenbrenner (1986), an adolescent interacts with one's peers and peers can give support. This could mean that peers could act as a buffer in the relation between negative life events and externalizing behavioural problems (Steinhausen & Metzke, 2001; Prinstein & La Greca, 2004). For instance, in the longitudinal study of Ystgaard, Tambs and Dalgard (1999), the authors found that social support from peers can prevent the development of mental health issues when adolescents are exposed to negative life events. Besides, in the longitudinal study of Criss, Pettit, Bates, Dodge and Lapp (2002), the authors found that positive peer relationships are moderators in the relation between family adversity and children's externalizing behavioural problems. In addition, in the longitudinal study of Sentse et al. (2010), the authors found that peer acceptance was a buffer in the relation between parental rejection and externalizing

behavioural problems among adolescents. However, in the study of Sentse et al. (2010), the authors investigated whether peer acceptance could act as a buffer for one negative life event (parental rejection) in the relation with externalizing behavioural problems. Peer acceptance is comparable to peer support and thus it might be interesting to investigate whether peer support could act as a buffer in multiple negative life events.

To summarize, the results above indicate that peer support could act as a buffer in the relation between negative life events, such as parental rejection (Sentse et al., 2010) and externalizing behavioural problems. Based on the results, it is expected that the negative relation between negative life events and externalizing behavioural problems among adolescents could be weakened by peer support.

SES. Low SES can, for instance, increase the chance of less sufficient access to mental health services. Having less access to mental health services can result in mental health problems, such as externalizing behavioural problems (Devenish, Hooley & Mellor, 2017). In addition, in the study of Schoon et al. (2002), the authors found that low SES could increase lower academic achievement. There are multiple studies that suggest that low SES could reinforce the relation between negative life events and externalizing behavioural problems. For instance, in the longitudinal study of Amone-P'Olak et al. (2009), the authors found that low SES was associated with more mental health problems and negative life events. An association was found between low SES and negative life events, which was partly mediated by environmental-related life events. In addition, in the longitudinal study of Wadsworth and Achenbach (2005), the authors found that adolescents who live in low SES circumstances, reveal an increased risk for the development of psychopathology, such as aggression and delinquency. Translated to the current study, living in low SES circumstances could increase the relation between negative life events and the development of externalizing behavioural problems.

In contrast, the *investment model* states that high SES could increase the opportunities for an adolescent to develop themselves, because high SES increases the chance of investments that could be made. For instance, parents could finance education and special training, parents could give their children healthy food, clothes and health care and most of the time high SES families live in a good neighbourhood. These advantages could stimulate the development of academic and social well-being of adolescents (Conger, Conger & Martin, 2010). For instance, high SES could give adolescents more access to mental health services to get help after a negative life event that happened (Perna et al., 2010; Reiss, 2013). In this way, high SES could act as a buffer in the relation between negative life events and externalizing

behavioural problems. In addition, in the study of McLeod and Kessler (1990), the authors found that high SES was a buffer in the relation between negative life events and the development of psychopathology. However, this study is done among participants who were older than 18 years. It might be interesting to investigate whether high SES could also act as a buffer in the relation between negative life events and externalizing behavioural problems for adolescents.

To summarize, the results and the investment model indicate that in negative life events, particularly in the case of high SES, SES might act as a buffer (McLeod & Kessler, 1990). However, SES might increase the negative effect of life events on externalizing behavioural problems among adolescents, when such events occur in low SES families (Amone-P'Olak et al., 2009). More certainty is needed about whether high SES could act as a buffer in the relation between negative life events and externalizing behavioural problems among adolescents. Based on the investment model and the results, it is expected that high SES could act as a buffer and thus weaken the relation between negative life events and externalizing behavioural problems among adolescents.

Current study

The aim of this study is to investigate the relation between negative life events and externalizing behavioural problems among adolescents. Besides, peer support and high SES are investigated whether they could act as buffers in this relation. Peer support and high SES could play a role in buffering the relation between negative life events and externalizing behavioural problems among adolescents (McLeod & Kessler, 1990; Criss et al., 2002; Sentse et al., 2010). At this moment, there is no study that investigates whether peer support and high SES could act as potential and protective buffers in the relation between multiple negative life events, such as death of a parents or divorce, and externalizing behavioural problems among adolescents.

Based on the literature above, it is expected that there is a relation between negative life events and externalizing behavioural problems among adolescents (Kim et al., 2003). In addition, it is expected that peer support could act as a buffer in the relation between negative life events and externalizing behavioural problems among adolescents (Sentse et al., 2010). Finally, it is expected that a higher SES could act as a buffer in the relation between negative life events and externalizing behavioural problems among adolescents (McLeod & Kessler, 1990; See figure 1).

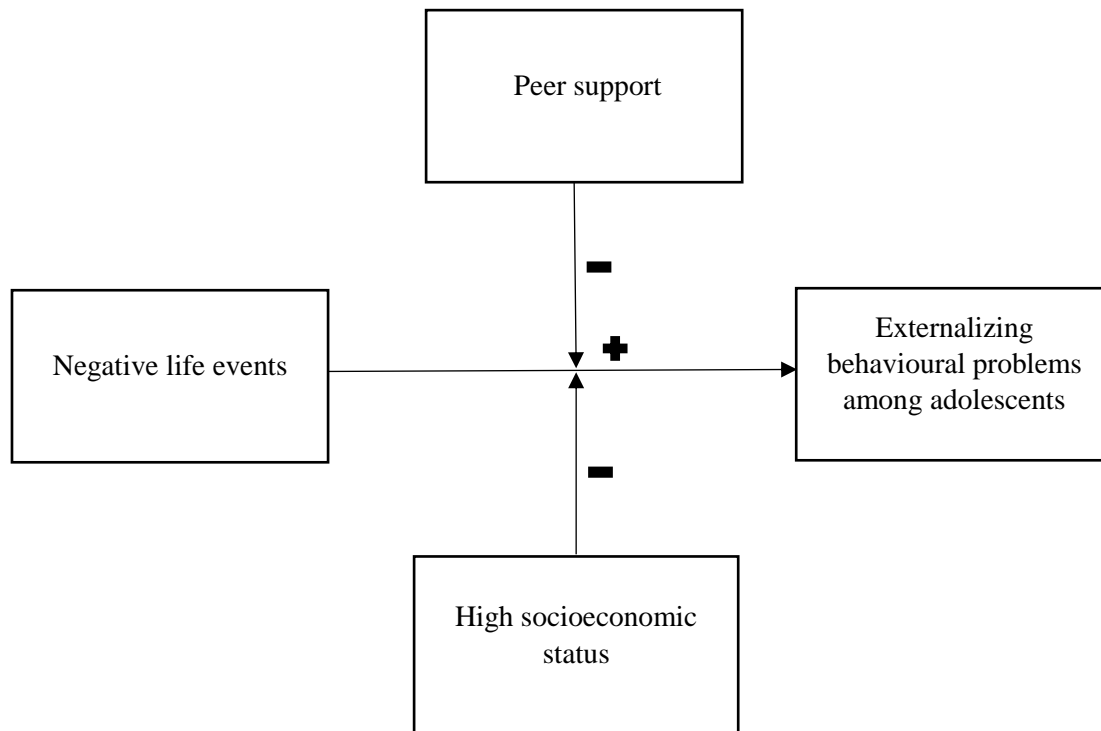


Figure 1. The relation between negative life events and externalizing behavioural problems among adolescents and the moderating roles of peer support and high socioeconomic status.

Method

Participants

The data that is used in the current study is part of the longitudinal study from TRacking Adolescents' Individual Lives Survey (TRAILS). TRAILS is a survey about research on the psychological, social and physical development of Dutch adolescents and young adults. It is an ongoing and multidisciplinary study. The sample involved adolescents who are living in rural and urban areas in the North of the Netherlands. 122 schools in these areas were participating in the data collection. The current study includes participants who participated at T1 ($N = 2230$, 49.2% boys, $M_{ageT1} = 11.11$, $SD = .55$), T2 ($N = 2146$, 48.8% boys, $M_{ageT2} = 13.6$, $SD = .53$, drop-out rate 3.7%) and T3 ($N = 1816$, 47.7% boys, $M_{ageT3} = 16.3$, $SD = .73$, drop-out rate 18.6%). The participants who missed one or more follow-up waves were more likely low SES families, parents who reported externalizing behavioural problems at baseline and were more likely to be boys (Oldehinkel et al., 2015). An attrition analysis was executed to analyse whether there was a significant difference between drop-outs and not drop-outs on study variables. This result was significant ($t(2147) = -3.77$, $p = .001$). This result means that there was a significant difference in age between drop-outs and included participants. A one-way ANOVA was executed to analyse whether there was a significant difference in gender

and who are missing at the scale of externalizing behavioural problems. The result showed that there was no significant difference ($F = .58, p = .56$). An independent samples t-test was executed to analyse whether adolescents who are missing at T3 significantly differ from externalizing behavioural problems at T2. The result was not significant ($t(2009) = .504, p = .614$).

Design and procedure

The TRAILS data was collected by a trained staff of TRAILS. Parents were asked to participate and whether their child was willing to participate in the study. Parents were interviewed at home, where they were visited by a trained interviewer of TRAILS. Before the interview started, parents filled in an informed consent. Adolescents filled in the questionnaires at school in groups, where they were supervised by TRAILS staff members. At school, the teachers were asked to fill in a questionnaire about the children in their class who were participating in TRAILS.

Measuring instruments

Negative life events. ‘Negative life events’ were assessed by using a questionnaire including items of different negative life events that could happen in an adolescent’s life. In total 13 items could be rated on a 2-points Likert-scale (0 = No and 1 = Yes). These 13 items were chosen by the author, because these items were the most impactful, such as death of a parent, divorce or illness of an important person in the environment (Table 1; Secor, Limke-McLean & Wright, 2017; Jackson & Warren, 2000). A sum score was made of these events to see if a participant experienced many or few life events. Examples of questions are ‘*Are your parents divorced in the past two years?*’ or ‘*Did your mother died in the past two years?*’.

Externalizing behavioural problems among adolescents. Externalizing behavioural problems among adolescents were assessed by the Youth Self-Report (YSR; Dick et al., 2011). Externalizing behavioural problems at T2 and T3 included 32 items with a 3-points Likert-scale (0 = Not at all and 2 = Obvious/Often). Examples of statements are ‘*I steal at home*’ and ‘*I drink alcohol without approval of my parents*’. A reliability analysis showed that there was a reliable scale at T2 (Cronbach’s alpha was $\alpha = .85$) and at T3 (Cronbach’s alpha was $\alpha = .87$)

Peer support. Peer support was measured by the classmates affection scale at T2 (Herba et al., 2008). Statements were used to ask about support by peers, which includes 4 items with a 5-points Likert-scale (1 = Never and 5 = Always). Examples of statements are ‘*I can really trust most of my classmates*’ and ‘*Most of my classmates like it to be around me*’. A reliability analysis showed that there was found a reliable scale (Cronbach’s alpha was $\alpha =$

.82).

SES. SES consists five indicators: income, educational level of both parents and occupational level of both parents (Ganzeboom & Treiman, 1996). SES was collected at T1 (Amone-P'Olak et al., 2009). A three distribution was made of the scale: 25% is low, 50% is middle and 25% is high. The scale was found reliable (Cronbach's alpha was $\alpha = .84$).

Data analysis

SPSS version 24 was used to execute the analyses. First, assumptions were checked before the analyses were executed. There was homogeneity of variances and there was no multicollinearity found, which means that the analyses were allowed to be executed. There were three outliers found who might had influence on parameter estimates on the scale of 'externalizing behavioural problems among adolescents'. It was decided to not remove these outliers, because of the big sample size of the dataset. In addition, descriptives of the variables were retrieved (Table 2) and correlations between the variables were calculated by Pearson Correlation (Table 3).

Three hierarchic regression analyses were executed. The first hierarchical regression analysis was executed to observe if there was a relation between negative life events at T2 and externalizing behavioural problems at T3. In a second model, using a hierarchical regression analysis, peer support was added as a moderator in the relation between negative life events and externalizing behavioural problems among adolescents. In a third model, using a hierarchical regression analysis, SES was added as a moderator in the relation between negative life events and externalizing behavioural problems among adolescents.

Results

Table 2 includes an overview of the correlations between the study variables. There is a significant positive correlation found between externalizing behavioural problems at T2 and externalizing behavioural problems at T3 ($r(1473) = .56, p = .001$). No significant correlation was found between negative life events and externalizing behavioural problems at T3.

Besides, there was no significant correlation found between peer support and externalizing behavioural problems at T3 and there was no significant correlation found between SES and externalizing behavioural problems at T3.

Main Effects

Table 4 shows the results of the hierarchical regression analyses. In step 1 gender was added as a control variable. No significant effect was found for gender, which means that there was no difference between boys and girls on externalizing behavioural problems at T3.

Externalizing behavioural problems at T2 was added in step 1 as a predictor of externalizing

behavioural problems. There was found a significant effect, which means that an adolescent that shows externalizing behavioural problems at T2 is more likely to show externalizing behavioural problems at T3 ($B = .62$, $SE B = .02$, $p = .001$).

Negative life events at T2 was added in step 2 and was not a predictor of externalizing behavioural problems at T3 ($B = .01$, $SE B = .00$, $p = .24$). In addition, peer support and SES were added as moderators in step 2 and both were not significant. This means that peer support and SES were not significant moderators in the relation between negative life events at T2 and externalizing behavioural problems at T3.

In step 3, interaction terms of z-scores of peer support and negative life events and SES and negative life events were added separately to the hierarchical regression model. The interaction effect of SES and negative life events was not significant. In addition, the interaction effect of peer support and negative life events was also not significant.

Discussion

The aim of the current study was to investigate whether negative life events predict externalizing behavioural problems among adolescents. In addition, this study investigated whether high SES and peer support could act as buffers for the negative consequences of life events on externalizing behavioural problems among adolescents. In this study, it was found that negative life events did not predict externalizing behavioural problems at a later age. Moreover, high SES and peer support were not found as buffers in the relation between negative life events and externalizing behavioural problems. Gender was included as a control variable.

Negative life events and externalizing behavioural problems among adolescents

It was hypothesized that negative life events could be a predictor of an increase in externalizing behavioural problems among adolescents. The current study demonstrated that there was no relation between negative life events and the development of externalizing behavioural problems. This finding is in contrast with the study of Kim et al. (2003), in which the authors found that there was a relation between negative life events and externalizing behavioural problems among adolescents. In the study of Kim et al. (2003), the authors measured, during a period of five years, every year negative life events and externalizing behaviour. The time between each assessment of the current study differs from the study of Kim et al. (2003). Because of the short time between the measuring points in the study of Kim et al. (2003), it might be that the authors were more able to follow the development of externalizing behavioural problems. In addition, in the study of King, Pedersen, Louie, Pelham Jr and Molina (2017), the authors found a relation between negative life events and

alcohol use as a form of externalizing behavioural problems among adolescents. This finding is in contrast with the current study. King et al. (2017) measured between and within person associations, which differs from the current study. Between person associations reflect more differences between individuals concerning the tendency to experience negative life events, where within person associations reflect the stress adaption process of negative life events and factors that contribute to stress. The authors separated between and within person associations and in this way, the authors were more able to get a better view of adolescents who are more likely to experience negative life events and which factors such as individual or environmental factors contribute to that. Future research could replicate this method to get a better view of individual differences in experiencing negative life events and the development of externalizing behavioural problems.

In the current study, negative life events were not a predictor of externalizing behavioural problems among adolescents. A possible explanation for this result could be the way of how negative life events were assessed in this study. In the studies of Bouma, Ormel, Verhulst and Oldehinkel (2008) and Bosch, Riese, Ormel, Verhulst and Oldehinkel (2009), the authors used also a severity scale of negative life events, beside the number of experienced events. In the longitudinal study of Bouma, Ormel, Verhulst and Oldehinkel (2008), the authors found indeed a relation between negative life events and depression. However, this study is not completely in agreement with the current study, because in the study of Bouma, Ormel, Verhulst and Oldehinkel (2008), the authors were interested in internalizing behavioural problems. In the current study, negative life events are measured by sum scores. This means that the number of negative life events that a participant had experienced were summed up. These sum scores do not show how a participant experienced the negative life event. Hence, the severity of a negative life event was not used in the current study. To analyse whether this could be a possible explanation, additional analyses were executed. After a measure of severity of experiencing negative life events was added, the relation between negative life events and externalizing behavioural problems remained not significant ($B = .001$, $SE B = .001$, $p = .42$). Similarly, the moderators peer support ($B = .002$, $SE B = .001$, $p = .08$) and high SES ($B = .002$, $SE B = .001$, $p = .07$) remained not significant as well. These findings suggest that the severity of perceiving negative life events is not a possible explanation for the not significant result between negative life events and externalizing behavioural problems.

Another possible explanation of this result could be that in the current study 13 items were used for measuring experienced negative life events. In previous studies 34 items or

even 89 items were used, however it was not mentioned which items these were (Bosch et al., 2009; King et al., 2017). Therefore, it was difficult to replicate these studies. Besides, it could be that some life events have more impact on an adolescent's life than other life events and that these more impactful events were not included in the questionnaire of this current study. For instance, in the study of Sanchez, Lambert and Cooley-Strickland (2013), the authors found that African American adolescents in low income urban neighbourhoods develop more externalizing behavioural problems when they experience more violent life events. The study of Sanchez, Lambert and Cooley-Strickland (2013) used a different population of adolescents than the current study, which means that these studies are not completely comparable. However, future research could serve a better comparison in which different negative life events are associated with externalizing behavioural problems.

Peer support

In the current study, it was hypothesized that peer support could be a moderator in the relation between negative life events and externalizing behavioural problems. The results showed that peer support was not a moderator in this relation. Because there was no main effect found for the relation between negative life events and externalizing behavioural problems, it was less likely to find peer support as a moderator in this relation. However, it is possible that peer support does not act as a buffer in the relation between negative life events and externalizing behavioural problems among adolescents. This could be explained by the fact that peer support was measured in the current study by 4 items and not with peer nominations by adolescents themselves. For instance, in the study of Waldrip, Malcolm and Jensen-Campbell (2008), the authors measured peer acceptance by how much adolescents liked each other and whether they see each other as close friends. In this way, an adolescent created for his own class an average of an overall peer acceptance measure. However, Waldrip, Malcom and Jensen-Campbell (2008) measured concept 'peer acceptance', but this concept is comparable to peer support. Future research could use such method to analyse whether in this way an effect could be found for peer support in the relation between negative life events and externalizing behavioural problems among adolescents.

A last possible explanation could be that, in the current study, only peer support and negative life events at T2 were used and thus there is not examined whether peer support is a moderator in the relation between negative life events and externalizing behavioural problems later on. Previous research has shown that in adolescence peers become more important (Sentse et al., 2010). At T2 the mean age is $M_{age} = 13.6$ ($SD = .53$). For instance, in the longitudinal study of De Goede, Branje and Meeus (2009), the authors found that peer

relations become more important during adolescence. The authors found that peers at age 16 give more support than peers at age 12. De Goede, Branje and Meeus (2009) suggest that adolescents at a later age might understand each other's needs more, that adolescents become more intimate and that adolescents develop interdependency. For future research, it might be interesting to investigate peer support, negative life events and externalizing behavioural problems at a later age, because it could be that adolescents understand each other better and that peers become more important at a later age.

High SES

In the current study, it was hypothesized that adolescents with a high SES status might develop less externalizing behaviour because of negative consequences of life events. This hypothesis was not confirmed by the results of the current study. Hence, high SES was not a moderator in the relation between negative life events and externalizing behavioural problems. It was also not likely that high SES could act as a buffer in this relation, because there was no relation found between negative life events and externalizing behavioural problems in the first place. Though, this finding is not consistent with the study of McLeod and Kessler (1990), in which the authors found that high SES was a buffer in the relation between negative life events and the development of psychological distress. However, it is possible that high SES does not act as a buffer in the relation between negative life events and externalizing behavioural problems among adolescents.

A possible explanation for this result could be that high SES is not per se an assurance for emotional well-being and thus weaken the negative consequences of negative life events. There are many more factors that contribute to how an adolescent feels emotionally and physically. According to the ecological model of Bronfenbrenner (1986), multiple factors in the life of an adolescent are interacting with each other, such as parents and peers. SES is one of the interacting factors in an adolescent's life. For instance, in the longitudinal study of Wilkinson and Andersson (2018), the authors found that for boys a diminished relation with their parents, regardless of the SES status, could increase mental health problems. It could be that in the current study, other factors play a more significant role in the relation between negative life events and externalizing behavioural problems, such as the relation with parents (Wilkinson & Andersson, 2018). For future research, it might be interesting to investigate these possible other factors and how these factors interact with each other.

A last possible explanation could be that in the current study only parental SES was measured and used and not the SES of adolescents themselves. Parental SES is not the only factor that contributes to the well-being of an adolescent. Besides, adolescents become more

independent when they grow older and they start developing their own SES by, for instance, making their own money. Adolescents make their own money, for instance, to buy clothes and to do social activities with peers (Plenty & Mood, 2016). In the cross-sectional study of Plenty and Mood (2016), the authors found an association between adolescent's own SES and their self-rated health, independently of parental SES. Hence, own SES does also contribute to (emotional) well-being. For future research, it might be interesting to take adolescent's own SES into account, beside parental SES, to analyse whether adolescent's own SES could act as a buffer in the relation between negative life events and externalizing behavioural problems.

Strengths and limitations

This study includes several strengths. First, the study uses a longitudinal design, which means that there might be causation between the study variables. Second, the current study uses a big sample size, which for instance reduces uncertainty about analyses. Third, two specific, potential and protective moderators were analysed in this study.

There are also limitations in the current study. In the first place, negative life events, externalizing behavioural problems and peer support were measured by self-reports. Self-reports are measures that are used a lot in studies, but this kind of reports can cause social desirable answers. This could mean that externalizing behavioural problems and negative life events are underreported in the current study (Bouma, Ormel, Verhulst and Oldehinkel, 2008). Besides, no interviews were used in the current study, which could reveal more contextual information (Bosch et al., 2009). In addition, parental and teacher insights on negative life events and externalizing behavioural problems of adolescents could also give more contextual information which could decrease social desirable answers of adolescents. Finally, the generalizability of the dataset to different cultural populations should be taken with caution. The dataset that was used in the current study includes a lot more participants who have a Dutch background than participants from another background.

Conclusion

It can be concluded that there was no relation found between negative life events and externalizing behavioural problems among adolescents. Thereby, SES and peer support were no moderators in this relation. Although it could be more likely that more negative life events, multi informant information and information on the experienced severity could have resulted in a different outcome. For instance, a combination of measures with number and severity of negative life events should be developed to investigate whether this could be a possible explanation of the results that are found in the current study. Future research should take these suggestions into account to investigate whether there exists a relation between negative life

events and externalizing behavioural problems among adolescents. Moreover, peers become more important during adolescence (De Goede, Branje & Meeus, 2009), so it might be interesting to investigate adolescents and their peers at a later age in relation to negative life events and externalizing behavioural problems and measure this by peer nominations (Waldrip, Malcolm & Jensen-Campbell, 2008). In addition, future research should look at emotional well-being of adolescents beside (high) SES of parents, because SES might be not an assurance of well-being. Besides, it might be that adolescents at a later age have developed their own status already which does provide them access to resources that contribute to (emotional) well-being, such as social activities with peers (Plenty & Mood, 2016). In this way, parental SES might not directly be related to emotional well-being, but adolescent's own SES might be in relation to well-being. Future research should also look at adolescent's own SES, beside parental SES, to analyse how own SES might act as a buffer in the relation between negative life events and externalizing behavioural problems. In short, the current study shows necessary start points to investigate the relation between negative life events and externalizing behavioural problems under different (study) circumstances.

Reference list

- Allen, K., Kern, M. L., Vella-Brodrick, D., Hattie, J., & Waters, L. (2016). What schools need to know about fostering school belonging: A meta-analysis. *Educational Psychology Review*, 1-34. doi:10.1007/s10648-016-9389-8
- Amone-P'Olak, K., Ormel, J., Huisman, M., Verhulst, F. C., Oldehinkel, A. J., & Burger, H. (2009). Life stressors as mediators of the relation between socioeconomic position and mental health problems in early adolescence: the TRAILS study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 48(10), 1031-1038. doi:10.1097/CHI.0b013e3181b39595
- Bergman, A. S., Axberg, U., & Hanson, E. (2017). When a parent dies – a systematic review of the effects of support programs for parentally bereaved children and their caregivers. *BMC Palliative Care*, 16(1), 1-15. doi:10.1186/s12904-017-0223-y
- Bosch, N. M., Riese, H., Ormel, J., Verhulst, F., & Oldehinkel, A. J. (2009). Stressful life events and depressive symptoms in young adolescents: Modulation by respiratory sinus arrhythmia? The TRAILS study. *Biological Psychology*, 81(1), 40-47. doi:10.1016/j.biopsycho.2009.01.005
- Bouma, E. M., Ormel, J., Verhulst, F. C., & Oldehinkel, A. J. (2008). Stressful life events and depressive problems in early adolescent boys and girls: the influence of parental depression, temperament and family environment. *Journal of Affective Disorders*, 105(1), 185-193. doi:10.1016/j.jad.2007.05.007
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: research perspectives. *Developmental Psychology*, 22(6), 723-742. doi:10.1037/00121649.22.6.723
- Conger, R. D., Conger, K. J., & Martin, M. J. (2010). Socioeconomic status, family processes, and individual development. *Journal of Marriage and Family*, 72(3), 685-704. doi:10.1111/j.1741-3737.2010.00725.x
- Criss, M. M., Pettit, G. S., Bates, J. E., Dodge, K. A., & Lapp, A. L. (2002). Family adversity, positive peer relationships, and children's externalizing behavior: A longitudinal perspective on risk and resilience. *Child Development*, 73(4), 1220-1237.
- De Goede, I. H., Branje, S. J., & Meeus, W. H. (2009). Developmental changes and gender differences in adolescents' perceptions of friendships. *Journal of Adolescence*, 32(5), 1105-1123. doi:10.1016/j.adolescence.2009.03.002
- Devenish, B., Hooley, M., & Mellor, D. (2017). The pathways between socioeconomic status and adolescent outcomes: a systematic review. *American Journal of Community*

- Psychology*, 59(1-2), 219-238. doi:10.1002/ajcp.12115
- Dick, D. M., Meyers, J. L., Latendresse, S. J., Creemers, H. E., Lansford, J. E., Pettit, G. S., ... & Buitelaar, J. K. (2011). CHRM2, parental monitoring, and adolescent externalizing behavior: evidence for gene-environment interaction. *Psychological Science*, 22(4), 481-489. doi:10.1177/0956797611403318
- Ganzeboom, H.B.G., & Treiman, D.J. (1996). Internationally comparable measures of occupational status for the 1988 International Standard Classification of Occupations. *Social Science Research*, 25, 201-239.
- Herba, C. M., Ferdinand, R. F., Stijnen, T., Veenstra, R., Oldehinkel, A. J., Ormel, J., & Verhulst, F. C. (2008). Victimization and suicide ideation in the TRAILS study: specific vulnerabilities of victims. *Journal of Child Psychology and Psychiatry*, 49(8), 867-876. doi:10.1111/j.1469-7610.2008.01900.x
- Jackson, Y., & Warren, J. S. (2000). Appraisal, social support, and life events: Predicting outcome behavior in school-age children. *Child Development*, 71(5), 1441-1457.
- Kim, K. J., Conger, R. D., Elder Jr, G. H., & Lorenz, F. O. (2003). Reciprocal influences between stressful life events and adolescent internalizing and externalizing problems. *Child Development*, 74(1), 127-143.
- King, K. M., Pedersen, S. L., Louie, K. T., Pelham Jr, W. E., & Molina, B. S. (2017). Between-and within-person associations between negative life events and alcohol outcomes in adolescents with ADHD. *Psychology of Addictive Behaviors*, 31(6), 699-711. doi:10.1037/adb0000295
- Kobasa, S. C. (1979). Stressful life events, personality, and health: an inquiry into hardiness. *Journal of Personality and Social Psychology*, 37(1), 1-11.
- Low, N.C., Dugas, E., O'Loughlin, E., Rodriguez, D., Contreras, G., Chaiton, M., & O'Loughlin, J. (2012). Common stressful life events and difficulties are associated with mental health symptoms and substance use in young adolescents. *BMC Psychiatry*, 12(1), 1-10. doi:10.1186/1471-244X-12-116
- March-Llanes, J., Marqués-Feixa, L., Mezquita, L., Fañanás, L., & Moya-Higueras, J. (2017). Stressful life events during adolescence and risk for externalizing and internalizing psychopathology: a meta-analysis. *European Child & Adolescent Psychiatry*, 26(12), 1409-1422. doi:10.1007/s00787-017-0996-9
- Masuda, M., & Holmes, T. H. (1978). Life events: perceptions and frequencies. *Psychosomatic Medicine*, 40(3), 236-261.
- McLeod, J. D., & Kessler, R. C. (1990). Socioeconomic status differences in vulnerability to

- undesirable life events. *Journal of Health and Social Behavior*, 162-172.
- Meijer, A. M., Oostveen, S. J. E., & Stams, G. J. J. M. (2008). De relatie tussen mantelzorg, ziekte van de ouder en gedragsproblemen bij kinderen [The relationship between caregiving, parental illness and behavioral problems in children]. *Kind en Adolescent*, 29(4), 208-220.
- Oldehinkel, A. J., Hartman, C. A., De Winter, A. F., Veenstra, R., & Ormel, J. (2004). Temperament profiles associated with internalizing and externalizing problems in preadolescence. *Development and Psychopathology*, 16(2), 421-440.
doi:10.10170S0954579404044591
- Oldehinkel, A. J., Rosmalen, J. G., Buitelaar, J. K., Hoek, H. W., Ormel, J., Raven, D., ... & Hartman, C. A. (2015). Cohort profile update: the tracking adolescents' individual lives survey (TRAILS). *International Journal of Epidemiology*, 44(1), 76-76n.
doi:10.1093/ije/dyu225
- Perna, L., Bolte, G., Mayrhofer, H., Spies, G., & Mielck, A. (2010). The impact of the social environment on children's mental health in a prosperous city: an analysis with data from the city of Munich. *BMC Public Health*, 10(1), 1-10.
doi:10.1186/1471-2458-10-199
- Plenty, S., & Mood, C. (2016). Money, peers and parents: Social and economic aspects of inequality in youth wellbeing. *Journal of Youth and Adolescence*, 45(7), 1294-1308.
doi:10.1007/s10964-016-0430-5
- Prinstein, M. J., & La Greca, A. M. (2004). Childhood peer rejection and aggression as predictors of adolescent girls' externalizing and health risk behaviors: a 6-year longitudinal study. *Journal of Consulting and Clinical Psychology*, 72(1), 103-112.
doi:10.1037/0022-006X.72.1.103
- Reiss, F. (2013). Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. *Social Science & Medicine*, 90, 24-31.
doi:10.1016/j.socscimed.2013.04.026
- Sanchez, Y. M., Lambert, S. F., & Cooley-Strickland, M. (2013). Adverse life events, coping and internalizing and externalizing behaviors in urban African American youth. *Journal of Child and Family Studies*, 22(1), 38-47.
doi:10.1007/s10826-012-9590-4
- Schoon, I., Bynner, J., Joshi, H., Parsons, S., Wiggins, R. D., & Sacker, A. (2002). The influence of context, timing, and duration of risk experiences for the passage from childhood to midadulthood. *Child Development*, 73(5), 1486-1504.

- Secor, S. P., Limke-McLean, A., & Wright, R. W. (2017). Whose Support Matters? Support of Friends (but Not Family) May Predict Affect and Wellbeing of Adults Faced With Negative Life Events. *Journal of Relationships Research*, 8(e10), 1-10.
doi:10.1017/jrr.2017.10
- Sentse, M., Lindenberg, S., Omvlee, A., Ormel, J., & Veenstra, R. (2010). Rejection and acceptance across contexts: Parents and peers as risks and buffers for early adolescent psychopathology. The TRAILS study. *Journal of Abnormal Child Psychology*, 38(1), 119-130. doi:10.1007/s10802-009-9351-z
- Steinhausen, H. C., & Metzke, C. W. (2001). Risk, compensatory, vulnerability, and protective factors influencing mental health in adolescence. *Journal of Youth and Adolescence*, 30(3), 259-280.
- Stoltz, S., Beijers, R., Smeekens, S., & Deković, M. (2017). Diathesis stress or differential susceptibility? testing longitudinal associations between parenting, temperament, and children's problem behavior. *Social Development*, 26, 783-796.
doi:10.1111/sode.12237
- Wadsworth, M. E., & Achenbach, T. M. (2005). Explaining the link between low socioeconomic status and psychopathology: testing two mechanisms of the social causation hypothesis. *Journal of Consulting and Clinical Psychology*, 73(6), 1146-1153. doi:10.1037/0022-006X.73.6.1146
- Waldrip, A. M., Malcolm, K. T., & Jensen-Campbell, L. A. (2008). With a little help from your friends: The importance of high-quality friendships on early adolescent adjustment. *Social Development*, 17(4), 832-852.
doi:10.1111/j.1467-9507.2008.00476.x
- Wilkinson, R., & Andersson, M. A. (2018). Adolescent Socioeconomic Status and Parent Child Emotional Bonds: Reexamining Gender Differences in Mental Well-being during Young Adulthood. *Society and Mental Health*, 00(0), 1-16.
doi:10.1177/2156869318761781
- Ystgaard, M., Tambs, K., & Dalgard, O. S. (1999). Life stress, social support and psychological distress in late adolescence: a longitudinal study. *Social Psychiatry and Psychiatric Epidemiology*, 34(1), 12-19.
- Zuckerman, M. (1999). Vulnerability to psychopathology: A biosocial model. Washington, DC: American Psychological Association. doi:10.1037/10316-000

Table 1. *Most impactful items of negative life events*

-
1. Did you got ill or did you have an accident in the past two years?
 2. Did someone of your family got ill or did someone in your family had an accident in the past two years?
 3. Did a good friend got ill or did a friend had an accident in the past two years?
 4. Did your mother died in the past two years?
 5. Did your father died in the past two years?
 6. Did your brother of sister died in the past two years?
 7. Did someone you cared about a lot died in the past two years?
 8. Did you repeat a class in the past two years?
 9. Were you suspended from school in the past two years?
 10. Did your mother of father got out of work in the past two years?
 11. Are your parents divorced in the past two years?
 12. Did someone used violence against you in the past two years?
 13. Did someone bully you in the past two years?

Table 2. *Demographic Characteristics of Participants (N = 2230)*

	N T1	M T1 (SD)	N T2	M T2 (SD)	N T3	M T3 (SD)	Min.	Max.
Total sample	2230	11.11 (.56)	2149	13.57 (.53)	1819	16.28 (.71)	10.01	18.69
% boys	49.2		48.8		47.7			
Neg. Life Events T2			2094	1.41 (1.22)			0	7
Ext. Behaviour			2011	.29 (.20)	1610	.31 (.21)	0	1
Peer Support T2			2086	3.56 (.73)			1	5
SES T1		2188	2.00 (.71)					

Table 3. *Bivariate Correlations, Means, Standard Deviations and Reach among the Main Study Variables (N = 2230)*

Variables	1.	2.	3.	4.	5.	6.	M	SD	Min.	Max.
1. Negative life events		-.01	.01	-.13**	-.15**	.01	1.41	1.22	0	7
2. Externalizing behaviour W2			.56**	.03	-.01	.01	.29	.20	0	1
3. Externalizing behaviour W3				.02	-.03	.03	.31	.21	0	1
4. Peer support					.06*	-.16**	3.56	.73	1	5
5. SES						-.02	2.00	.71	1	3
6. Gender							.49	.50	0	1

Note. * $p < .05$, ** $p < .01$, Scale Negative Life Events (0=No or 1=Yes) Scale Externalizing Behavioural Problems among Adolescents (0=Not at all or 2=Obviously/Often), Scale Peer Support (1=Never or 5=Always), Scale SES (1=Lowest 25% SES or 3=Highest 25% SES)

Table 4. *Hierarchical Regression Analysis for Predicting Externalizing Behavioural Problems at T3 with SES and Peer Support as Moderators (N = 2230)*

Variables	Coefficients				
	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Model 1					
ExtBehaviour W2 ^a	.62	.02	.56	26.05**	.001
Gender	.02	.01	.03	1.60	.111
Model 2					
NegLifeEvents ^b	.01	.00	.03	1.18	.237
Peer Support	.00	.01	.03	.41	.686
SES	-.01	.01	-.02	-.87	.383
Model 3					
NegLifeEventsxPA ^c	-.00	.00	-.00	-.13	.895
NegLifeEventsxSES	.01	.01	.04	1.70	.09

Note. * $p < .05$, ** $p < .01$, ^aDependent Variable: Externalizing Behavioural Problems among Adolescents T2, ^bIndependent Variable: Negative Life Events, ^cModerator: Peer Support, The interaction terms were calculated separately, Model 1 $R^2 = .567^{**}$, $R^2 = .562^{**}$, Model 2 $\Delta R = .322$, $\Delta R = .317$, Model 3 $\Delta R = .322$, $\Delta R = .318$