

The association between negative inter-parental interaction in early adolescence and externalizing problem behavior in late adolescence.

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Master's thesis

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May 28, 2021

Abstract

Parental behavior influences the behavior of an adolescent. Earlier research suggests that problematic behavior in adolescents may be caused by negative interaction between parents. The aim of this study is to map the association between negative inter-parental interactions in early adolescence and late adolescents' externalizing problem behavior in Dutch families. In this study externalizing problem behavior is conceptualized as aggression, delinquency and substance abuse. A multivariate regression analysis was performed in $N = 358$ Dutch families with two parents and at least 1 adolescent child. The results show that there is no direct association between negative inter-parental interaction and substance abuse and between negative inter-parental interaction and aggression. However, a significant association was found between negative inter-parental interaction and adolescent delinquency. These results confirm that interactions between parents influence adolescent behavior. Explanations for the outcomes and recommendations for further research are discussed.

Keywords: Negative inter-parental interaction, adolescent externalizing problem behavior, aggression, delinquency, substance abuse.

Introduction

Externalizing problem behaviors can threaten healthy development of adolescents (Wolfe & Mash, 2018). Delinquency, substance abuse and aggression are all in the top twelve most common problems among Dutch youth (Nederlands Jeugd Instituut, 2019). This means that these externalizing problems are threatening the development of many Dutch adolescents. Therefore, it is important to investigate which factors negatively influence the externalizing behavior of adolescents. The inter-parental dyad is the head of the family, it influences the emotional climate of the whole family and the individual family members to a large extent (Luthar, 2006; Chu et al., 2010). Knowledge about the influence of the inter-parental interactions on adolescent behavior can guide interventions to strengthen the pedagogical climate of families and thereby reduce or prevent problem behavior of adolescents. This research aims to contribute to this knowledge by investigating how *negative inter-parental interactions* in early adolescence are associated with *delinquency*, *substance abuse* and *aggression* in late adolescence.

Externalizing behaviors in adolescence

Due to the rapid changes in their brains, adolescents have trouble estimating the consequences of their actions (Dow-Edwards et al., 2019). As a result, adolescents generally exhibit more risky behavior than adults. Due to increased stress reactivity in the brain, adolescence is a sensitive period (Romeo, 2013). Disruptions in adolescent development would affect the stress response and increase the likelihood of stress-related problems such as substance abuse, aggression and delinquency.

Substance abuse

More than 30% of Dutch adolescents at the age of 16 have used drugs (Rijksinstituut voor Volksgezondheid en Milieu, 2020). Not in all these cases the use of drugs is harmful or problematic, because experimental behavior is age-appropriate for adolescents (Spanjaard & Slot, 2015). When substances are used systematically and substance dependence arises, it has become problematic. In this study, this is referred to with the term substance abuse. The consequences of systematic substance abuse are very harmful. For example, excessive substance use can damage the brain, resulting in a reduction in memory, executive functions and learning capacity, among other things (Squeglia et al., 2009). Substance use in late adolescence increases the likelihood of substance use and addiction in adulthood (McCambridge et al., 2011).

Delinquency

In this study delinquency refers to mild criminal activities such as theft, violence, vandalism and drug dealing. It is possible, but not necessary, for the adolescent to have been in contact with

the police and the judicial authorities to score high on delinquency. Adolescents involved in delinquency appear to have reduced opportunities in the labor market. Both the probability of a job and the quality of the job decrease as someone has a delinquent history (Carter, 2018b). Adolescent delinquency also appears to be predicting substance use, delinquency and relationship problems in adulthood (Brook et al., 2013).

Aggression

The third externalizing problem this study focusses on is aggression. In this study, aggression is defined as the expression of emotions by shouting, swearing, hitting, kicking and throwing things. Aggression among adolescents threatens adolescent development. Adolescents who show aggressive behavior are at risk for substance use, depression and development of major aggression and delinquency in later life (Herrenkohl et al., 2009). In addition, adolescents who exhibit aggressive behavior risk being rejected by peers (Bukowski et al., 2019). Establishing and maintaining relationships with peers is an important developmental task during adolescence (Spanjaard & Slot, 2015). Aggression potentially disrupts peer relations and thus the development of the adolescent.

As described above, adolescent externalizing problem behaviors like substance abuse, delinquency and aggression have very negative effects on the long-term. Because of these negative consequences, it is of much importance to prevent adolescents from developing these externalizing problem behaviors and make sure experimental age appropriate behaviors do not aggravate into substance abuse, delinquency and aggression.

Inter-parental conflict influencing externalizing problems

According to the literature and multiple theoretic frameworks, adolescent externalizing problem behavior is related to inter-parental interactions. According to the Family Systems Theory (Minuchin, 1974), the negative behavior of the adolescents can be traced back to patterns of interactions within the family. Not only individual family members, but also the existing sub-systems (any coalition of family members) interact with each other and influence each other. Consequently, individual problematic behaviors of the adolescent like substance abuse, aggression or delinquency can be related to influences of the parental sub-system. This study focusses on this specific association. The Social Learning Theory by Albert Bandura (1978) also substantiates the importance of environmental influences on an individual. According to this theory an individual learns how to behave by observing and imitating surrounding behavior, as well as by the reaction of his surroundings on his own behavior. Van Eldik et al. (2020) use the Social Learning Theory to explain the association between inter-parental conflict and adolescent aggression. The aggressive expressions parents use during inter-parental conflicts give an example to the adolescent about how to deal with problems.

Consequently, adolescents will use the same expressions to handle both their conflicts with others and their own internal struggles. When the interaction between parents is characterized by both verbal and non-verbal aggression it is referred to in literature as hostile inter-parental conflict (Davies & Cummings, 1994; van Eldik et al., 2020). The current study adheres to this specific definition of inter-parental conflict.

Several studies have demonstrated the influence of inter-parental conflict on the behavior and development of children and adolescents (Gryncz & Fincham, 1990; Buehler et al., 1998; Bradford et al., 2007; Harold & Sellers, 2018; van Eldik et al., 2020). The meta-analysis of van Eldik et al. (2020) included 169 studies on child behavioral problems and the inter-parental relationship and concluded that the association between inter-parental conflict and children behavioral problems is at least as strong as the association between parent-child relationship and children behavioral problems. In addition, the risk of children's externalizing problems is specifically increased in cases of hostile inter-parental conflict. In fact, cooperative marital conflict and the exchange of positive emotions actually reduce the risk of problem behavior (Zhou & Buehler, 2019). When parents cooperate during a conflict and express sympathy and love towards each other and when parents manage to resolve their conflict well, adolescents experience less threat. This reduces activation of adolescents negative coping strategies like aggression, substance use or delinquency.

Although these studies show a direct link between inter-parental conflict and adolescent externalizing problem behavior, these studies have some limitations. One of these limitations is that studies on inter-parental conflict and its influence on the behavior of adolescents are predominantly international. Since the fundamental aspects of behaviors, psychology and motivations vary among populations (Henrich et al., 2010), it is of much added value to research inter-parental conflict and adolescent externalizing problem behaviors specifically for the Dutch population. In addition, most studies are cross-sectional meaning that the influence of inter-parental conflict on adolescent behavior is measured at one time point. The current study has a longitudinal design that measures not only the association between variables, but also the development of the association over time (Field, 2018). Because adolescence covers a period of approximately five years, it is of added value to apply this longitudinal aspect.

This study tries to supplement this gap in the literature by answering the question how inter-parental conflict in early adolescence associates with delinquency, aggression and substance abuse in late adolescence. Mainly based on the work of van Eldik et al. (2020) it is expected that inter-parental conflict explains a significant part of the variance of aggression, delinquency and substance abuse among adolescents. The vast majority of the studies on this topic confirms the positive asso-

ciation. Therefore, the hypothesis of this current study also implies a positive association between variables.

Methods

Participants

This study uses selected data from the Research on Adolescent Development and Relationships - Young cohort (RADAR-Y) (van Lier et al, 2011). RADAR-Y is a broad study focusing on Dutch families with adolescent children and the way family members develop and influence each other. The participants in the RADAR-Y study consist of $N = 497$ Dutch adolescents who were approximately 13 years old at the start of the study. An important characteristic of the participating families is that all family members have a good understanding and writing of the Dutch language. Moreover, all of these families consist of at least two children above the age of 10. These two characteristics made the participating families differ from the general Dutch population in some ways. Most importantly the education level of parents is slightly higher in the sample group than in the general Dutch population. Secondly the percentage of participating families with a low socioeconomic status is 7%. This is slightly lower than the percentage of low jobs in the general Dutch population. The current study only uses data from adolescents who participated with both parents.

Procedure

Sample selection started with 1544 adolescents from 230 randomly selected elementary schools in the middle and western part of The Netherlands. Due to the absence of a sibling or parents or due to no phone records only 1081 participants were approached for the phase 2 interview. This interview was completed by 611 participants. Another 114 participants dropped out because they did not sign the informed consent. This makes a total of $N = 497$ participants. These 497 participants are divided in two groups. One control group ($N = 291$) and one at risk group ($N = 206$). Participants in the at-risk group were selected based on the outcomes of the teacher assessment. In this study, data of both the control group and the risk group are used. All participants have signed the informed consent and are aware of the consequences and expectations their participation to this research brings. To measure the constructs, three questionnaires are used that were collected during home assessments. These assessments took place under supervision of a trained collector. This study and its assent and consent documents were approved by the Ethical-Medical Committee of University Medical Centre Utrecht (The Netherlands).

Measuring instruments

Aggression

The aggression scale of the Youth Self Report (YSR) is used to measure aggressive behavior of the target adolescent (Verhulst et al., 1997). The scale on aggressive behavior consists of 19 items. Example item: *“I damage or destroy my things”*. The adolescent reports on his or her own aggressive behavior on a scale from 0 (*never*) to 2 (*often*). Higher scores indicate more aggression. The YSR scores good on reliability and sufficient on validity according to the COTAN review (1999). The reliability of the scale on aggressive behavior is good, the Cronbach’s alpha of 19 items is $\alpha = .85$.

Delinquency

The delinquency scale of the Youth Self Report (YSR) is used to measure delinquency (Verhulst et al., 1997). This scale consists of 11 items. Example item: *“I steal from places other than home”*. Adolescents reported on their own behavior by answering on a scale from 0 (*never*) to 2 (*often*). Higher scores indicate more delinquent activities. The reliability of the delinquency scale is sufficient, the Cronbach’s Alpha of 11 items is $\alpha = .70$.

Substance abuse

To measure substance abuse one item of the Questionnaire Substance Use (SU) is used. This is a self-developed questionnaire that specifically measures the frequency of substance use by the adolescent. The item used to measure substance abuse by the adolescent is: *“How often did you drink alcohol in the past 4 weeks?”* The adolescent stated on their own behavior on a scale from 0 (*none*) to 5 (*five to six days a week*). Higher frequencies indicate more substance use.

Inter-parental conflict

To measure the construct of inter parental conflict the negative interaction scale of the Network of Relationship Inventory (NRI) is used (Furman & Buhrmester, 1985). The NRI questionnaire provides information about relationship quality and characteristics. The negative interaction scale specifically gives an indication of the negative interaction in a certain type of relationship. The reports of both father and mother are merged and averaged. This scale contains 6 items using response options in a range from 0 (*not at all*) to 5 (*a lot*). Example item: *“How much do you and your partner argue with each other?”*. Higher scores indicate more inter-parental conflict. The validity of the NRI is sufficient and the psychometric properties were good (Furman & Buhrmester, 2009). The reliability of the negative interaction scale is very good, the Cronbach’s Alpha of 11 items is $\alpha = .92$.

Statistical Analysis

To investigate the association between negative inter-parental interactions and adolescent externalizing problem behavior, a multivariate regression analysis was performed. The first step

into this procedure is to compose the final sample. When participants have completed less than 90% of the items of each questionnaire or when constructs were not measured at both timepoints, this will be considered missing data and participants will be excluded from the analysis. Participating families with only one parent will be excluded from the sample. Subsequently the assumptions will be checked. The requirements for performing this analysis are homoscedasticity, normality, linearity, the absence of multicollinearity and outliers (Field, 2018). It was decided not to remove the 4 outliers that were found. In this analysis an outlier indicates an extreme amount of conflict between parents or extreme externalizing problems of the adolescent. In doing so they provide important information for answering the research question. Then the regression analysis was performed using General Linear Model. The independent variable is the mean score of both parents for inter-parental conflict. The construct externalizing problem behavior is divided into three dependent variables: aggression, substance use, and adolescent delinquency. The current study will investigate inter-parental conflict at the adolescents age of 13 years old (wave 1) and will be referred to as Time 1 (T1). Adolescent externalizing problem behavior will be investigated at the adolescents age of 18 years old (wave 6) and will be referred to as Time 2 (T2).

Results

Table 1 shows the descriptive statistics of the final sample. Due to attrition 74 participants were excluded from the sample. Another 65 participants were excluded due to missing values. Little's MCAR test was significant [$\chi^2(434) = 671,250, p = 0.000$], but the normed χ^2/df ($671,250/434=1,547$) indicated that the assumption of missingness at random was not seriously violated. The assumption of multicollinearity was not violated for all VIF scores were below 4. Also the assumptions of homoscedasticity and linearity were not violated for the scatterplot showed an equal distribution in residuals and a linear correlation between the variables. The assumption of normality was met because the histogram showed normal distribution of the residuals. When checking the correlations between the variables, it was found that aggression and delinquency correlate significantly, $r = .639, p < .001$. Also negative inter-parental interaction significantly correlates with delinquency, $r = .119, p = .025$. No significant correlation was found for the other variables.

The analysis included a total of $N = 358$ participants. Participating adolescents were 43,6% female and 56,4% male. The data on aggression showed that most participants answered 0 or 1 on a scale from 0 to 2. This means that the mean score for aggression is relatively low. The data on delinquency also showed that most participants answered 0 or 1 on a scale from 0 to 2. The mean score on delinquency can be interpreted as relatively low. The participating adolescents use drugs on average 1.97 times a week. Fathers and mothers reported similar scores on negative inter-parental

interaction. The mean score of all participating parents on negative inter-parental interaction is .49. This is considered a low score meaning that these parents experience relatively few negative inter-parental interactions. This is a relatively low score indicating few negative inter-parental interactions.

Table 1

Descriptive Statistics

Variable	<i>N</i>	<i>M</i>	<i>SD</i>
Negative Inter-parental Interaction	358	1.51	.49
Negative Interaction Scale Fathers	358	1.51	.55
Negative Interaction Scale Mothers	358	1.51	.53
Aggression	358	.27	.25
Substance Use	358	1.03	.63
Delinquency	358	.32	.25

Note. *N* = number of participants. *M* = Mean. *SD* = Standard deviation.

Inter-parental conflict predicting adolescent externalizing problem behavior

The results showed that the model is not significant, $F(3) = 1.75, p = .157$. The model explains up to 2.1% of the variance in externalizing problem behavior among the participating adolescents.

Aggression. The results for the outcome variable of aggression are shown in Table 2. The results showed that there is a no significant association between negative inter parental interaction in early adolescence on aggression in late adolescence, $F(1) = 2.64, p = .105$.

Table 2

Multivariate Regression Analysis for the Prediction of Aggression by Negative Inter-parental Interaction

Variable	<i>B</i>	<i>p</i>	<i>R</i> ²	95% CI	
				LL	UL
Aggression	.044	.105	.07	-.009	.097

Note. *B* = unstandardized coefficient. *p* = < .05. CI = Confidence Interval.

Substance use. The results for the outcome variable of substance use are shown in Table 3. The results showed no significant association of negative inter-parental interaction in early adolescence on substance use in late adolescence, $F(1) = .02$, $p = .897$.

Table 3

Multivariate Regression Analysis for the Prediction of Substance Use by Negative Inter-parental Interaction

Variable	<i>B</i>	<i>p</i>	<i>R</i> ²	95% CI	
				LL	UL
Substance Use	-.009	.897	.00	-.145	.127

Note. *B* = unstandardized coefficient. *p* = < .05. CI = Confidence Interval.

Delinquency. The results for the outcome variable of delinquency are shown in Table 4. The results showed a significant association of negative inter-parental interaction in early adolescence on delinquency in late adolescence, $F(1) = 5,10$, $p = .025$. Although the association is significant, the effect size is weak.

Table 4*Multivariate Regression Analysis for the Prediction of Delinquency by Negative Inter-parental Interaction*

Variable	<i>B</i>	<i>p</i>	<i>R</i> ²	95% CI	
				LL	UL
Delinquency	.062	.025	.01	.008	.116

Note. *B* = unstandardized coefficient. *p* = < .05. CI = Confidence Interval.

Discussion

Familial factors play an important role in the well-being and development of adolescents. Since the inter-parental dyad is the head of the family, it influences the emotional climate of the whole family and the individual family members to a large extent (Luthar, 2006; Chu et al., 2010). Knowledge about the influence of the inter-parental relationship on the development of adolescents is important to ensure or improve the well-being of adolescents. The current study focusses on negative interactions between parents and their influence on externalizing problem behavior of adolescents. No similar scientific research was found studying this association among Dutch families and with a longitudinal aspect. This research investigated the influence of negative inter-parental interaction in early adolescence on substance use, aggression and delinquency in late adolescence in randomly selected Dutch families using multiple regression analysis.

Based on established theories and previous studies, it was hypothesized that adolescents show higher levels of externalizing problem behavior in late adolescence, when parents have a lot of negative interactions with each other in early adolescence (Gryncch & Fincham, 1990; Bradford et al., 2007; Harold & Sellers, 2018; van Eldik et al., 2020). No support was found for the association between negative inter-parental interaction and substance use and aggression. Some support was found for the association between negative inter-parental interactions and delinquency. Negative inter-parental interaction in early adolescence appears to be a predictor of delinquent behavior in late adolescence. This result gives important information contributing to the scientific knowledge on contextual influences on adolescent problem behavior. This finding confirms that interactions between parents associate with adolescent behavior. This is in line with scientific theories discussed in the introduction of this article, such as the Social Learning Theory (Bandura, 1974) and the Fam-

ily Systems Theory (Minuchin, 1974). This result also shows that delinquent behavior can develop after several years.

This study also shows that negative inter-parental interaction in early adolescence does not directly associate with aggression and substance use in late adolescence. This contradicts the hypothesis and does not correspond with most of the previous studies. This unexpected finding could be explained by the separation-individuation process. According to the separation-individuation process, the parent-child relationship changes during adolescence (Youniss & Smollar, 1990; Meeus et al., 2005). As for healthy identity development, adolescents seek less closeness to parents while peers become more important. Adolescents are more often away from home and spend less time with parents (Tsai et al., 2012). This might cause that adolescents are less influenced by the behavior of their parents. Another possible explanation for the insignificant findings can be found in the compartmentalization hypothesis and the compensatory hypothesis. According to the compartmentalization hypothesis, the parental subsystem has a strong boundary because of which it cannot influence other subsystems in the family (Krishnakumar & Beuhler, 2000; Mastrotheodoros et al., 2021). This would mean that because of these strong boundaries, negative inter-parental interactions can not influence adolescents. The compensatory hypothesis states that parents compensate the negative experiences and feelings about the interaction with their partner. Therefore, parents invest more in a good relationship and positive interactions with their children (Kouros et al., 2014; Mastrotheodoros et al., 2021). These three mechanisms provide a possible explanation for the insignificant results for the influence of negative inter-parental interaction on aggression and substance use.

The overall conclusion of this research is that negative inter-parental interaction in early adolescence does not predict externalizing problem behavior in late adolescence. Although delinquency showed to be significantly influenced by negative inter-parental interaction, it is not enough to conclude that externalizing problem behavior is caused by negative inter-parental interactions.

Strengths and limitations

This study has several limitations that are important for the interpretation of the results and for advice on further research. For example, this study used data from two time points with an intervening period of five years. This is a long and turbulent period in the adolescent's life. The results of this research may be explained by what took place during this intervening period. In order to measure more accurately what influence parents have on the externalizing problem behavior of adolescents, this intermediate period should also be examined. Despite the large amount of participants, the sample consists of adolescents attending regular education, living with their parents and experiencing a relatively normal development. Also these families are generally well-functioning

and have a relatively high socio-economic status. It would be of added value to also investigate the families experiencing greater problems and where, for example, professional care is involved. The current sample also consists to a large extent of families in which negative inter-parental interaction does not occur. The strength of the association can be better interpreted when examining only adolescents whose aggression, delinquency, and substance use have become problematic, or where all investigated parents have high levels of negative inter-parental interaction. Also the data used in this research was merely gathered through self report instruments. Therefore responses were not verified and there is a risk of attribution bias and recall bias. However, because of the large sample size and the good psychometric properties of the measuring instruments the results can be considered reliable. Another limitation of the current study is the fact that the outcomes are not controlled for in T1. Measuring the outcome variables in T1 will give more detailed information about direct link between negative inter-parental interaction and aggression, delinquency and substance use.

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