

Why Aren't All Adolescents Delinquent?

Examining the Predictors, Pathways, and Processes Leading
to Adolescent Delinquency (Abstention)

Natalie Mercer

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Waarom vertonen niet alle adolescenten delinquent gedrag?

Een onderzoek naar de voorspellers, ontwikkelingspaden, en processen
die leiden tot (onthouding van) delinquent gedrag.

(met een samenvatting in het Nederlands)

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Natalie Chantal Mercer
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Promotoren: Prof. dr. S.J.T. Branje
Prof. dr. W.H.J. Meeus

Copromotor: Dr. E. Crocetti

Beoordelingscommissie:

Prof. dr. M. Deković

Universiteit Utrecht

Prof. dr. J.S. Dubas

Universiteit Utrecht

Prof. dr. G.J.J.M. Stams

Universiteit van Amsterdam

Prof. dr. W.A.M. Vollebergh

Universiteit Utrecht

Prof. dr. F.M. Weerman

Erasmus Universiteit

Table of Contents

Chapter 1	General Introduction	9
Chapter 2	Linking Delinquency and Personal Identity Formation Across Adolescence	23
Chapter 3	An Experimental Investigation of the Influence of Deviant Peers	43
Chapter 4	Examining the Mediating Role of Time Spent with (Delinquent) Peers	55
Chapter 5	Adolescent Social Anxiety, Adolescent Delinquency (Abstention), and Emerging Adulthood Relationship Quality	79
Chapter 6	Childhood Predictors and Adult Life Success of Adolescent Delinquency Abstainers	97
Chapter 7	General Discussion	119
	References	135
	Samenvatting (Summary in Dutch)	149
	Acknowledgements	155
	About the Author	161

CHAPTER 1

General Introduction

General Introduction

Most adolescents engage in some form of minor delinquency or rule-breaking behaviour such as shoplifting, vandalism, underage or illegal substance use (e.g., Brezina & Piquero, 2007; Chen & Adams, 2010; Johnson & Menard, 2012; Moffitt, Harrington, Caspi & Milne, 2002; Singer, 2014). Further, delinquency sharply increases from early-to-middle adolescence and subsequently decreases from middle-to-late adolescence (Farrington, 1986). Experimenting with minor delinquency during this period is common to the extent that some scholars even consider it to be a typical part of adolescence (Erikson & Erikson, 1957; Hirschi, 1969; Moffitt, 1993; Moffitt, 2008; Roisman, Monahan, Campbell, Steinberg & Cauffman, 2010). Certainly, delinquency prevalence is substantially higher during adolescence when compared to the rest of the life course (Farrington, 1986).

Understandably, much research has been dedicated to examining the predictors, pathways, and processes leading to this increase in (minor) delinquency during the adolescent years. Likewise, adolescents who actually engage in delinquent behaviour have received the majority of research attention (see also: Jennings & Reingle, 2012). For example, much research has focused on predictors and processes that can differentiate between minor and serious delinquents, or between persistence and desistance (e.g., Farrington, Piquero, & Jennings, 2013; Loeber, Pardini, Stouthamer-Loeber & Raine, 2007; Moffitt & Caspi, 2001; Sampson & Laub, 2003; Stouthamer-Loeber et al., 2004; Van Domburgh, Loeber, Bezemer, Stallings & Stouthamer-Loeber, 2009). While these are certainly essential research endeavours, one question remains unanswered: How do some adolescents manage to avoid delinquency during a period in which it is so prevalent?

Often referred to as delinquency abstainers, this group represents a minority of adolescents (5-15%; Brezina & Piquero, 2007; Chen & Adams, 2010; Johnson & Menard, 2012; Moffitt et al., 2002; Piquero, Brezina & Turner, 2005; Owens & Slocum, 2015) who do not commit any delinquency or rule-breaking whatsoever. However, little is known about these adolescents and what leads them to abstain from delinquency, as research has only recently begun to explicitly examine adolescent delinquency abstention (Boutwell & Beaver, 2008; DeLisi & Piquero, 2011).

While it may initially seem counterintuitive to focus on adolescent abstainers in order to better understand adolescent delinquency, in this dissertation we argue that understanding delinquency abstention is imperative to the discussion of whether or not (some minor) delinquency is normative in adolescence (Moffitt, 2003). Generally, experimenting with minor delinquency during adolescence, a transitional developmental phase in which many others are also engaging in similar behaviours, is considered to be less problematic when compared to a minority of people who participate in high-rate serious delinquency across the life course. Further, minor delinquency is sometimes even seen as

adaptive and understandable adolescent behaviour. However, this picture is incomplete: Research cannot accurately assess the nature of adolescent minor delinquency until more is known about the adolescents who manage to abstain from it (Piquero & Moffitt, 2005). By examining minor delinquency not only in comparison to serious delinquency, but also in comparison to delinquency abstention we can gain a more comprehensive understanding of this phenomenon. Therefore, the primary aim of this dissertation was to examine (minor) delinquency in adolescence by paying explicit attention to abstention from minor delinquency and rule-breaking when possible. In doing so, this dissertation aimed to investigate an underexplored aspect of the delinquency literature to answer a question that is often taken for granted – why aren't all adolescents delinquent?

Adolescent Delinquency (Abstention) Theory: An Overview

This dissertation makes use of two different theoretical perspectives in order to better understand adolescent delinquency abstention: Moffitt's (1993) Developmental Taxonomy and Hirschi's (1969) Social Control Theory. And while there is a richness of theories attempting to explain delinquency in adolescence, these two guide our theoretical framework because they assume some (minor) delinquency in adolescence can be expected. Therefore, they suggest that explanations for non-delinquency in adolescence are required and they offer hypotheses about this non-delinquency.

The Developmental Taxonomy

In explaining the temporary increase in delinquency during adolescence, the developmental taxonomy (Moffitt, 1993) proposes three different explanations for three different groups of adolescents: The life-course-persistent delinquents, the adolescence-limited delinquents, and the delinquency abstainers. First, life-course-persistent delinquents are a small group of adolescents that are antisocial from childhood throughout adulthood. This life-long delinquency is hypothesized to result from an interaction between neuropsychological problems, individual vulnerabilities, and criminogenic or adverse environments leading to a host of cumulative disadvantages that persist over time.

Second, adolescence-limited delinquents are a much larger group of adolescents who only participate in delinquency during adolescence, explaining the increase in delinquency prevalence during these years. Instead of resulting from structural individual and environmental disadvantages, adolescence-limited delinquency is hypothesized to arise from a desire for autonomy and independence resulting from the mismatch between biological and social maturation (i.e., the maturity gap). Adolescence-limited delinquents attempt to ease the discomfort of this mismatch by mimicking their more

delinquent life-course-persistent peers, who appear in the eyes of adolescents to have the more mature adult-like status they desire. Therefore, adolescence-limited delinquency is an attempt at “knifing off childhood apron strings” (Moffitt, 1993, p. 688), in which adolescents attempt to use delinquency as means to demonstrate their individuation and independence from their parents. As a result, adolescence-limited delinquency is expected to be less pathological and more age normative when compared to life-course-persistent delinquency. Indeed, the extent to which this adolescence-limited delinquency is prevalent, minor, and seen to arise from the specific developmental challenges of adolescence, lends to its depiction as standard adolescent behaviour.

Third, adolescent abstainers are another minority group who do not engage in any delinquency whatsoever during adolescence. By arguing that adolescence-limited delinquency is a developmentally normative and even an adaptive response to the changing contextual circumstances of adolescence, the developmental taxonomy subsequently suggests that delinquency abstainers may be poorly adjusted. Because a major assumption underlying adolescence-limited delinquency is that adolescents mimic the behaviour of their more delinquent peers, the basis for explaining adolescent abstention is limited access to these peers. Further, there are specific hypotheses about why abstainers may be excluded or restricted from learning about delinquency from their peers. First, abstainers may not experience the maturity gap - this could be because they experience late biological maturity, or because they have early access to adult-social roles mitigating this biological and social-mismatch. Second, this exclusion may be related to structural barriers, such as parental control or strict rules that prevent them from learning about delinquency. Third, abstainers may have characteristics seen as unattractive by (more popular) peers, or that leave them reluctant, unable or restricted from joining peer groups. For example, abstainers may be overcontrolled, anxious, shy, or timid. Together, these hypotheses indicate that abstainers may have a unique set of personal factors that limit their ability to participate, or interest, in the typical adolescent social scene and therefore, also limit their exposure to delinquent role models and opportunities for own delinquency. Therefore, the developmental taxonomy expects that the high prevalence of adolescent delinquency in comparison to other ages can be explained by three discrete processes that explain three different types of adolescents.

Social Control Theory

In order to explain the increase in prevalence of (minor) delinquency in adolescence, the social control theory (Hirschi, 1969) presumes that all people are inherently likely to perceive delinquency as rewarding. More specifically, people are generally motivated to seek gratification in the easiest way possible. Therefore, a motivational explanation for delinquency is not required. Instead, social control theory hypothesizes that delinquency

results from adolescents' variation in the strength of their bonds to conventional society. Adolescents with strong bonds to (pro-social) parents, teachers, schools or otherwise conventional institutes are more likely to evaluate delinquency and relationships with delinquent peers as costly because they may damage these social bonds. Adolescents with already weak or absent social bonds have "less to lose" and are therefore more likely to succumb to the motivation to associate with potentially costly delinquent peers and engage in delinquency.

These social bonds can be comprised of four different elements: attachment, which is the emotional closeness that adolescents have with conventional others, for example their parents or teachers; commitment, which involves adolescents' commitment to long-term conventional goals, for example, their educational commitments; involvement, which is the participation in conventional activities such as homework or school activities; and belief, which is belief in the moral validity of the law (Lilly, Cullen & Ball, 2014). Additionally, social bonds are not necessarily presumed to be stable across time. While developmental changes may weaken or strengthen these bonds (e.g., leading to increased delinquency during adolescence), adolescents who maintain close ties with their parents, school or other legitimate institutions, and therefore maintain their ties to conventional society, will be protected from delinquency. Together, these social bonds therefore represent the socialization of adolescents into conventional non-delinquent behaviour. Further, social bonds are expected to operate in the same manner for all adolescents. More generally put, social control theory expects that abstainers should possess more protective or promotive factors (e.g., social bonds) compared to adolescents who engage in delinquency. Further, stronger and weaker social bonds should distinguish more and less delinquent adolescents, respectively. Therefore, contrary to the developmental taxonomy's discrete group-based model, social control theory, alongside other general theories of crime (e.g., Laub & Sampson, 1993; Gottfredson & Hirschi, 1990) expects that different levels of delinquency amongst adolescents can be explained by between-person heterogeneity in a continuous underlying process.

Adolescent Delinquency (Abstention) Theory: Combining, Comparing, and Contrasting

Together, these two theories provide a useful guiding framework for the examination of adolescent delinquency with a focus on understanding delinquency abstention. According to both the developmental taxonomy and the social control theory, engaging in some level of delinquency during adolescence is, to a certain extent, normative (i.e., non-delinquency requires an explanation). However, these two theories also create an

interesting contrast: In the developmental taxonomy, adolescents who do not engage in any delinquency may have distinctive and even potentially pathological characteristics that prevent their involvement in minor delinquency via limited access to their (delinquent) peers. Whereas in the social control theory, abstaining from delinquency is likely to be a reflection of a host of positive factors leading adolescents to avoid both delinquency and delinquent peers. In this dissertation, we build on these theoretical hypotheses by examining five research questions concerning the nature of adolescent delinquency (abstention) drawn from the theoretical compatibilities and contrasts that arose from these theories. Table 1 provides an overview of these main theoretical concepts (TCs) which are incorporated into the five sub-aims outlined below.

Table 1. Overview of the Primary Theoretical Hypotheses Addressed in this Dissertation

Theoretical Concepts (TC)	Theory		Chapter
	Developmental Taxonomy	Social Control Theory	
Explanatory:			
(TC1) Primary Explanation for Adolescent (Limited) Delinquency	Maturity Gap Delinquent Peers	Weak Social Bonds	Chapter 2, 4
(TC2) Influence of Delinquent Peers	Influence	Selection	Chapter 3
(TC3) Primary Explanation for Delinquency Abstention	Exclusion from (Delinquent) Peers: Structural Barriers Personal Characteristics	Strong Social Bonds	Chapters 4, 5, 6
Conceptual:			
(TC4) Expectation for Delinquency Distribution	Discrete	Continuous	Chapters 4, 6
(TC5) Nature of Adolescent (Limited) Delinquency	Normative and understandable	Normative but preventable	Chapters 2, 4, 6
(TC6) Nature of Delinquency Abstention	Maladaptive	Adaptive	Chapters 4, 6

Adolescent Minor Delinquency: Identity Commitments as Social Maturity

First, we aimed to test the theoretical assumption that adolescent delinquency and the challenges of managing the transition from childhood to adulthood are related. Indeed, the developmental taxonomy and social control theory expect that adolescent delinquency is related to developmental changes in physical, psychosocial, and social domains related to the maturity gap and weakening bonds to parents and conventional others, respectively (Table 1, TC1).

However, while adolescence is often thought of as a transitional period, perhaps it is better described as a developmental stage that is both transitional and formative. For

instance, while there are many noticeable changes in a variety of developmental domains, the resulting events and experiences can set adolescents onto a particular course into adulthood (Scott & Steinberg, 2008). Indeed, the formation of a personal identity is thought to be a key developmental task of adolescence, and one of the reasons why adolescence can be so challenging for some youth (Erikson, 1950; Marcia, 1966). In a description of adolescence comparable to the one provided by the developmental taxonomy, Erikson (1968) expects that adolescents are stuck in a psychosocial moratorium: they are simultaneously letting go of childhood identifications while trying to forge their own personal identities in the transition to adulthood. Therefore, we consider successful personal identity formation and the corresponding ability to make firm identity commitments (e.g., to your education or friends) to be an indicator of social maturity.

Additionally, social control theory (Hirschi, 1969) hypothesizes that weak or absent social bonds will lead to delinquency. This weakening or absence of bonds to conventional society corresponds with Erikson's expectations that adolescents who struggle to find meaningful conventional commitments will experience difficulties in successfully forming their own identity. Therefore, we also consider that adolescents who are unable to commit to conventional life-goals may also fail to experience the turning points in identity development and therefore may be unable to make the firm commitments necessary for personal identity synthesis.

Further, strong bonds may protect adolescents from delinquency by positioning them into conformity, but they may also be indicators of the ability to form identity commitments more easily without the need for much exploration, and therefore limit opportunities to misstep into delinquency (e.g., Benson, Harris, Rogers, 1992; Meeus, Oosterwegel & Vollebergh, 2002). Indeed, consistent with the developmental taxonomy, rebellious, deviant, and otherwise delinquent behaviours may all be a means of personal (identity) exploration (Erikson & Erikson, 1957).

Certainly, as implied by both delinquency and identity theories - the high prevalence of minor delinquency in adolescence could be either an oft-occurring (negative) by-product of, or precursor to, the general state of ambiguity experienced during the physical, psychological, and social transition from childhood to adulthood. For example, delinquency could occur as the result the ambiguity of adolescence when adolescents engage in delinquency as a coping mechanism for this uncertainty (e.g., the maturity gap), or when adolescents misguidedly use delinquency to explore their potential identity commitments. Further, participating in delinquency in the first place may reflect a relative inability to form meaningful (both identity and conventional) commitments that would have otherwise supported adolescents in this transition. Additionally, engaging in delinquency may also further damage already weak social bonds or identity commitments. Nevertheless, this proposed conceptual link between adolescent delinquency and identity

formation has yet to be examined longitudinally. Therefore, Chapter 2 of this dissertation examined this theoretically implied, but not yet empirically tested, relation between the developmental task of forging a personal identity (e.g., social maturity) and experimenting with (minor) delinquency across adolescence.

The Influence of Delinquent Peers

Second, we wanted to examine the competing expectations regarding the role of deviant peers from both theoretical perspectives (Table 1, TC2). Peer deviance is one of the most robust predictors of one's own deviance (Pratt et al., 2010) and both the developmental taxonomy and social control theory suggest that delinquent peers are related to adolescent delinquency. However, while the developmental taxonomy hypothesizes that exposure to delinquent peers creates a model for deviancy mimicked by otherwise non-delinquent adolescents (e.g., a form of peer influence), social control theory suggests that adolescents with strong social bonds will not seek out delinquency nor delinquent peers. Instead adolescents with weak bonds, who are already more likely to engage in delinquency, will also seek out delinquent peers (e.g., selection effects).

While research has often examined the role of deviant peers in adolescent delinquency, few studies have done so with an experimental approach that allows us to examine influence in isolation from selection effects (but see: Gallupe et al., 2016; Paternoster, McGloin, Nguyen & Thomas, 2013). Therefore, Chapter 3 experimentally manipulated exposure to a deviant peer in order to examine the possibility of a causal influence of deviant peers on own delinquency.

Factors Related to Time Spent with (Delinquent) Peers

Third, we aimed to test the theoretical prepositions regarding less time spent with (delinquent) peers leading to delinquency abstention (Table 1, TC3). On the one hand, according to the developmental taxonomy, exposure to (delinquent) peers is the most important process related to the distinction between adolescents who engage in some adolescence-limited delinquency and adolescents who do not. Abstainers may be excluded from (delinquent) peer groups on the basis of personal characteristics, or structural barriers. On the other hand, social control theory hypothesizes that adolescents with strong social bonds will have no need to associate with deviant peers, or engage in any delinquency.

However, these different processes have yet to be tested when comparing abstainers to adolescents who engage in some minor delinquency. Previous research has primarily tested differences between abstainers and non-abstainers. These comparisons may lead to inaccurate conclusions because abstainers may share certain traits with adolescents who engage in some minor delinquency but not with more seriously delinquent adolescents

(e.g., Brezina & Piquero, 2007). Therefore, Chapter 4 examined factors related to time spent with (delinquent) peers while comparing abstainers, experimenters, and more delinquent adolescents. In doing so, we are able to better understand processes leading to delinquency (abstention) in adolescence while simultaneously comparing the mechanisms expected by group-based theories of delinquency (e.g., developmental taxonomy) versus theories that expect an underlying pathway to delinquency (e.g., social control theory; Table 1, TC4).

Abstainers and the Anxiety Paradox

Fourth, we aimed to examine whether abstainers are more (socially) anxious than non-abstainers, as one of the expectations of the developmental taxonomy is that abstainers may be anxious adolescents leading to exclusion from peer groups (Table 1, TC3). This hypothesis runs counter to the social control theory's general expectation that abstainers are less likely to be delinquent because they possess positive promotive factors. Therefore, it is necessary to examine the role of social anxiety in the context of parental and peer relationships.

Research generally suggests that adolescent abstainers are not entirely socially excluded - they report having friends but they have fewer friends (Chen & Adams, 2010) and they spend less time with these friends (Barnes, Beaver & Piquero, 2011; Johnson & Menard, 2012). Additionally, research has also found abstainers tend to be shy, withdrawn, passive or compliant (Owens & Slocum, 2015), more rational, and non-confrontational (Chen & Adams, 2010). Therefore, it seems that there is some evidence consistent with the developmental taxonomy's notion of shyness, or (social) anxiety as traits related to delinquency abstention. However, in support of the social control theory, research also suggests that delinquency abstainers are, for the most part, well-adjusted adolescents with good relationships with their parents (Piquero & Brezina, 2005; Chen & Adams, 2010). However, social anxiety is generally related to poorer quality relationships with both parents and peers (e.g., Brumariu & Kerns, 2008; Kingery, Erdley, Marshall, Whitaker & Reuter, 2010; Muris, Meesters, van Melick, Zwambag, 2001). Therefore, the theoretical and empirical findings that abstainers experience social anxiety (developmental taxonomy) and good quality relationships (social control theory) seem somewhat at odds. However, research has not yet examined this social anxiety and relationship quality paradox with regards to delinquency abstention. It could be plausible that in adolescence, non-clinical social anxiety protects against delinquency without reaching levels that would harm relationships with parents and peers. Therefore, Chapter 5 examined the relation between delinquency abstention, social anxiety, and relationship quality with both parents and peers.

Adolescent Delinquency (Abstention) Theories: Competing or Complementary?

Finally, we aimed to test the predominant conceptual differences between the developmental taxonomy and social control theory with regards to their expectations for delinquency (abstention). These conceptual differences can be summarized with competing hypotheses about two main presumptions (Table 1, TC4; TC5/6). First, the developmental taxonomy is a group-based theory that expects that different predictors and processes lead to abstention, adolescence-limited, and life-course-persistent delinquency (e.g., exclusion from peers, trapped in the maturity gap, and neuropsychological problems, respectively). Alternatively, social control theory expects that delinquency is a continuous construct and that delinquency abstention will be predicted by the same factors that predict more delinquency (e.g., strong bonds versus weak bonds). Second, these theories of abstention are divided on more than just the discrete versus continuous nature of the factors that would predict abstaining: they also differ on whether delinquency abstention is adaptive behaviour. Therefore, we propose that the developmental taxonomy may apply to one subgroup of abstainers characterized by discrete predictors and maladaptive functioning, while the social control theory may apply to another subgroup of abstainers who are characterized by promotive factors and adaptive functioning. Therefore, Chapter 6 examined whether these two competing theories and their two overarching conceptual differences are compatible if we consider the possibility of two groups of abstainers.

Samples and Study Designs

This dissertation makes use of three longitudinal datasets and one experimental study. Chapter 2 and Chapter 4 use data from the Young Cohort from the Research on Adolescent Development and Relationships project (RADAR Young; Van Lier et al., 2011). Chapter 3 uses experimental data collected from Dutch university students. Chapter 5 makes use of data from the Early Cohort from the CONflict And Management Of RELationships study (CONAMORE; Meeus et al., 2004) and Chapter 6 uses data from the Cambridge Study in Delinquent Development (CSDD; West & Farrington, 1973).

RADAR-Young Sample

The Research on Adolescent Development and Relationships project is an ongoing longitudinal study designed to identify and examine both familial and peer influences on adolescent development. The Young Cohort of this study consists of 497 Dutch adolescents (43% female) recruited from various elementary schools in The Netherlands. Data collection began in 2006, when adolescents were in their first year of secondary school and approximately age 13. Target adolescents, their families, and their best

friends completed a series of questionnaires during six annual home visits, providing multi-informant longitudinal data across adolescence. In this sample, 97% of adolescents identified themselves as being Dutch, 85% lived with both biological parents and 89% of families reported that at least one parent had a medium to high-level occupation.

Experimental Data

Data were collected on 69 students (61% female) who were on average 20 years old. Participants were recruited from Utrecht University and Utrecht University of Applied Sciences under the façade of a study on individual differences predicting memory recall. All participants had the opportunity to cheat to illegitimately earn more money (deviancy) but participants in the experimental condition ($n = 33$) were exposed to a deviant peer who verbalized their intention to cheat, justified this behaviour, and then visibly cheated on the memory recall task. In this sample, 91% of participants reported their ethnicity to be Dutch.

CONAMORE-Early Cohort Sample

The CONflict And Management Of RELationships study is a longitudinal study on psychosocial development in Dutch adolescents. The focus of the study is on personality, problem behaviours, and relationships with parents, friends, and romantic partners. The early cohort consists of 923 adolescents (49% female) followed for ten years starting in 2001. The first five measurements were annual and consisted of a series of self-report questionnaires at schools from age 12-16. Five years later, 727 of these adolescents were followed up for a sixth measurement in early emerging adulthood. CONAMORE participants were recruited from various high schools in the Utrecht region, The Netherlands. Most adolescents in the sample lived with both parents (85.1%) and reported their ethnicity to be Dutch (81.7%). The remaining adolescents reported themselves as belonging to various ethnic minorities (e.g., Surinamese, Antillean, Moroccan, and Turkish).

The Cambridge Study in Delinquent Development Sample

The Cambridge Study in Delinquent Development (CSDD) is also an ongoing prospective, multi-informant longitudinal survey of the development of offending and antisocial behaviour in 411 males from South London followed from age 8 to age 56. Data collection began in 1961-62 and the sample primarily consists of boys who were registered at any of six state primary schools within a one-mile radius of the research office at the time. Interviews and assessments were completed in school at ages 8, 10 and 14. They were interviewed at the research office at 16, 18, and 21 and at home at 25, 32, and 48. At various points throughout the study parents, peers and teachers were

involved in data collection, providing multi-informant data regarding different facets of development related to delinquency. Finally, in order to obtain information regarding convictions for both the boys and their family members, searches were conducted in the criminal record office up to 1994 and in the national police database from then onwards. Most participants (87%) were British-Caucasians. At the start of data collection 94% of the boys could be described as working-class based on their father's occupation compared with the national figure of 78% at that time. The majority of the boys were living in conventional two-parent families.

Outline

This dissertation aimed to examine the nature of delinquency in adolescence by focusing on delinquency abstention. We used two theories of adolescent delinquency as our guiding theoretical framework: the developmental taxonomy (Moffitt, 1993) and social control theory (Hirschi, 1969). Five chapters in this dissertation addressed research questions that arose from these sometimes compatible but more often conflicting theories. Table 2 provides an overview of the theoretical constructs and their link to each of the empirical chapters in this dissertation. Chapter 2 tested the assumption that delinquency in adolescence is related to the challenges of the developmental task of forming a personal identity. Chapter 3 experimentally examined the possibility of peer influence on own delinquency. Chapter 4 examined the theoretical prepositions regarding the processes underlying the role of time spent with (delinquent) peers leading to delinquency (abstention). Chapter 5 examined whether or not delinquency abstainers are more (socially) anxious than non-abstainers and how this relates to parent and peer relationship quality. Chapter 6 examined the predominant conceptual differences between the two theories as well as the possibility of two different groups of abstaining adolescents. Chapter 7 is a general discussion of the theoretical implications of this research and provides potential directions for future research on adolescent delinquency (abstention).

Table 2. Overview of Empirical Chapters: Research Questions, General Theoretical Concepts, Samples, Designs, and Measures.

Chapter	Research Question	Main Theoretical Concepts	Sample & Design	Delinquency (Abstention) Measure	Predictors, Correlates, & Outcomes
Ch. 2	(How) Are Delinquency and Personal Identity Related Across Adolescence?	(TC1) Primary Explanation for Adolescent (Limited) Delinquency	RADAR-Young Longitudinal Ages 14-18 N = 497 (57% Male).	11-item Self Report (YSR) 13-item Parent Report (CBCL)	Personal Identity Formation (e.g., Social Maturity).
Ch. 3	Is There a Causal Influence of Peer Deviancy on Own Deviancy?	(TC2) Influence of Delinquent Peers	University Students Experimental Mean Age 20.6 N = 69 (39% Male)	Cheating to Earn Money Illegitimately	Exposure to a Deviant Peer
Ch. 4	Are Personal Characteristics, Structural Barriers, and Social Bonds Related to Time Spent With (Delinquent) Peers and to Delinquency (Abstention)?	(TC3) Primary Explanation for Delinquency Abstention (TC4) Expectation for Delinquency Distribution	RADAR-Young Longitudinal Ages 13-18 N = 497 (57% Male).	2-item Self-Report Smoking Behaviour 30-item Self-Report Delinquency Scale	Personal Characteristics Structural Barriers Social Bonds Peer Factors
Ch. 5	Are Delinquency Abstainers Socially Anxious, and How Does This Relate to Parent and Peer Relationship Quality?	(TC3) Primary Explanation for Delinquency Abstention	CONAMORE-Early Cohort Longitudinal Ages 12-21 N = 923 (49% Male)	16-item Self-Report Criminal Behaviour Scale	Personal Characteristics Social Bonds
Ch. 6	Are Childhood Predictors of Delinquency (Abstention) Linear or Non-linear? Can Competing Theories be Reconciled by Two Groups of Abstainers?	(TC4) Expectation for Delinquency Distribution (TC5) Nature of Delinquency (TC6) Nature of Delinquency Abstention	CSDD Longitudinal Ages 8-48 N = 411 (100% Male)	8-item Self Report Delinquency 18-item Criminal Convictions	Childhood Predictors Adult Life Successes

CHAPTER 2

Linking Delinquency and Personal Identity Formation Across Adolescence*

Mercer, N., Crocetti, E., Branje, S., van Lier, P., & Meeus, W. Linking Delinquency and Personal Identity Formation Across Adolescence: Examining Between- and Within-Person Associations. *Revise and Resubmit.*

* N.M. and E.C. conceptualized the study. N.M. analyzed the data and wrote the manuscript. E.C., S.B., P.v.L., and W.M. provided feedback on the analyses and manuscript.

Abstract

Adolescent delinquency and identity formation have both been described in relation to the confusion, doubt, and need for individuation and autonomy faced by adolescents. While theoretical conceptualizations (e.g., Erikson, 1968; Moffitt, 1993) suggest that delinquency and identity formation might be developmentally intertwined across adolescence, this link had yet to be longitudinally examined. This study tested whether delinquency and identity are related and whether we could determine a developmental order considering both between- and within-person associations across adolescence. We examined these associations in a multi-informant sample of 497 Dutch adolescents followed for 5 annual waves from age 14-18. Between-person cross-lagged models showed that adolescents who scored higher on delinquency relative to their peers, scored lower on commitment and higher on reconsideration, one year later. Within-person cross-lagged models showed that when adolescents reported above their own average on delinquency, they reported decreased commitment and increased reconsideration one year later. Additionally, within-persons, when adolescents reported an increase in in-depth exploration compared to their own average they reported decreased delinquency one year later. From these results we can conclude that delinquency and personal identity are indeed related across adolescence. Experimenting with delinquency hampers identity formation by increasing reconsideration and decreasing commitment. Within-person results suggest that interventions tailored to increase in-depth exploration in adolescents may help to prevent adolescent delinquency.

Introduction

There are good reasons to assume that delinquency and personal identity formation may be developmentally intertwined. Most adolescents engage in some form of delinquency or rule-breaking (Moffitt, Caspi, Harrington & Milne, 2002) and for many adolescents delinquency is thought to be an attempt to evoke more autonomy or an adult-like status (e.g., Chen, 2010) in response to the role-ambiguity brought about by the discrepancy between their social and biological age (Moffitt, 1993). At the same time and relatedly, the most important developmental task during adolescence is to individuate from childhood identifications to form a stable personal identity (Erikson, 1950; Marcia, 1966). Therefore, in this study we used two theories of adolescent delinquency, the developmental taxonomy (Moffitt, 1993) and social control theory (Hirschi, 1969), to link adolescent delinquency to adolescent identity formation as developed from Erikson's (1950; 1968) theory of psychosocial development.

Additionally, while previous research has focused on between-person differences in the relation between delinquency and identity, this study tested both between- and within-person relations between delinquency and identity. Delinquency and identity theories refer to processes occurring both between- and within-adolescents, therefore both approaches should be incorporated to comprehensively test this theoretical link. Between-persons, the relation between variables is relative to that of other adolescents (i.e., rank-order stability), and within-persons, the relation between variables is relative to fluctuations within an adolescent (i.e., more akin to causal processes). By including both between- and within-person associations we aimed to provide a more complete overview of the developmental interplay between these two key aspects of adolescence.

Linking Delinquency and Identity Theories

The developmental taxonomy's (Moffitt, 1993) description of adolescence, the challenges of the maturity gap and adolescents' need for autonomy and independence, runs parallel to Erikson's (1968) expectations of adolescents stuck in a role-vacuum, letting go of childhood identifications while trying to forge their own commitments, in the process of developing their own personal identities. Additionally, social control theory's (Hirschi, 1969) expectation that weakened bonds or attachments can lead to delinquency corresponds with Erikson's expectations that adolescents who struggle to find meaningful commitments experience difficulties in successfully forming their own identity. With these conceptual similarities, it seems plausible that delinquency and the process of identity formation may be developmentally intertwined. To further delineate this link we describe delinquency and identity theory in more detail below.

Adolescent Delinquency Theory

A starting point for the plausible link between adolescent delinquency and adolescent identity formation is the finding that the number of people who participate in delinquency sharply increases from early-to-middle adolescence and subsequently decreases from middle-to-late adolescence (Farrington, 1986). To explain this temporary rise in delinquency, the developmental taxonomy (Moffitt, 1993) hypothesized that delinquency confined to adolescence is motivated by the developmental need for autonomy and independence, which arise from the role-ambiguity caused by a discrepancy between biological and social maturation. In this way, adolescence-limited delinquency is considered to be a way of “knifing off childhood apron strings” (Moffitt, 1993, p. 688), in which adolescents can demonstrate that their beliefs are distinct from those of their parents. Indeed, delinquency that is confined to the adolescent years is expected to be less pathological and more age normative (Barnes & Beaver, 2010). However, whereas delinquency may be a prevalent response to the changing biological and social circumstances of adolescence it is not without consequences. Certainly, adolescents may find themselves ensnared in a deviant life-style due to the potentially damaging consequences of this delinquency (e.g., the snare hypothesis, Moffitt, 1993).

In contrast to the developmental taxonomy (Moffitt, 1993), the social control theory (Hirschi, 1969) suggests that adolescents with weakened bonds or commitments to parents, teachers, or schools for example, may perceive delinquency to be less costly in comparison to adolescents with strong bonds or commitments, who may feel as if they have something to lose by being delinquent. For some adolescents, delinquency may also be interpreted as an expression of an inability to have these positive bonds, or as a lack of conventional goals. While social control theory does not exclude the possibility that developmental changes naturally weaken the strength of these bonds, it does suggest that adolescents who, for example, maintain close bonds with their parents or strong commitments to school, and therefore maintain ties to conventional society, will be protected from delinquency, whereas those who do not will have a greater risk for delinquency. Together, these theories form the basis for adolescent delinquency theory to which we link adolescent identity theory.

Adolescent Identity Theory

During the adolescent period in which we see the increase, peak and subsequent decrease in delinquency, young people are simultaneously faced with the developmental task of forming a coherent personal identity – a subjective feeling of self-sameness and continuity over time (Erikson, 1950; 1968). Indeed, Erikson (1968) suggested that adolescents may be stuck in a role-vacuum or psychosocial moratorium in which their role is ambiguous for both adolescents and adults. This role-vacuum period is an integral part of identity

formation as it provides the necessary opportunity for adolescents to explore their own interests, views, and beliefs in order to make different identity commitments, distinct from those internalized during childhood. In doing so, adolescents can move between two opposing dimensions of identity formation: synthesis and confusion. Adolescents who make meaningful choices about their identity and form stable commitments can achieve a unique personal identity. Adolescents who move from one commitment to another and as a result, lack a sense of meaning or purpose can remain in a state of identity confusion (Erikson, 1950).

Erikson's ideas about the identity formation process inspired many different conceptualizations of identity. For instance, the notion of identity synthesis and confusion stimulated the identity status model (Marcia, 1966), which in turn inspired the Meeus-Crocetti model (Crocetti, Rubini, & Meeus, 2008; Meeus, van de Schoot, Keijsers, Schwartz & Branje, 2010) used in the current paper. In the Meeus-Crocetti model commitment and in-depth exploration on the one hand, and reconsideration of commitments on the other hand represent the two opposing dimensions of identity formation (i.e., synthesis versus confusion). Specifically, *commitment* refers to firm choices that adolescents make with regards to various developmental domains, and the self-confidence that is derived from these choices; *in-depth exploration* refers to the extent to which adolescents actively explore their commitments, gather new information about these commitments, and discuss their commitments with others; and *reconsideration of commitment* refers to the comparison of current commitments to possible alternatives, and adolescent's efforts to change their current commitments when they are no longer appropriate or satisfactory (Crocetti, Sica, Schwartz, Serafini, & Meeus, 2013). The interplay between these three processes underlines a dual-cycle process (Luyckx, Goossens & Soenens, 2006; Meeus, 2011). In the first cycle, adolescents form commitments by considering and reconsidering them (identity formation). In the second cycle, adolescents explore their current commitments in depth, which aides in the consolidation of commitments (identity maintenance). Therefore, by including commitment, in-depth exploration, and reconsideration, this model aims to capture the dynamic process behind Erikson's (1968) identity synthesis versus identity confusion.

Integrating Delinquency and Identity Theories

By linking delinquency and identity theory we are able to conceptualize different possibilities for the expected developmental order of these two adolescent phenomena. First, we consider that exploration by means of delinquency may not only be a response to the maturity gap or psychosocial role-vacuum, but may also be explicitly related to

the process of identity development. For instance, rebellious, deviant, and otherwise delinquent behaviour may all be used as a means for exploration (Erikson, 1962; Erikson & Erikson, 1957). This would suggest that in the process of searching for independence, autonomy and their own identity, adolescents might also (misguidedly) experiment with deviancy.

However, even if delinquency is means of exploring identity alternatives or a temporary filling of a maturity gap, it can still have negative consequences on identity formation and the successful transition into adulthood. For instance, in line with the snare hypothesis (Moffitt, 1993), one consequence of adolescent delinquency is being labeled as a delinquent by schools, the judiciary system or even by parents or peers. Any of these could result in the confirmation of a deviant identity to adolescents who are in the process of making sense of themselves and their role in a conventional society (Erikson & Erikson, 1957; Wiley, Slocum, Esbensen, 2013).

Additionally, engaging in delinquency may also be related to identity confusion indirectly via ensnaring consequences such as poor school attachment (Agnew, 1991; Hoffman, Erickson & Spence, 2013), poor academic achievement, or school dropout (e.g., Moffitt et al., 2002; Siennick & Staff, 2008), poor relationships with parents (e.g., Warr, 2007) or poor relationships with peers that could in turn hamper identity synthesis. For example, decreased school attachment would damage adolescents' commitment to school, and strained relations with non-delinquent friends may lead to reconsideration of close friendships (see also: Pop, Negru-Subtirica, Crocetti, Opre & Meeus, 2016). Therefore, we expect that adolescent delinquency may hamper identity synthesis and promote identity confusion.

Second, we consider that adolescents who are unable to commit to conventional life-goals may fail to experience the turning points in identity development and therefore may be unable to make the firm commitments necessary for identity synthesis. This inability to make commitments can lead to identity confusion, which is thought to be a risk factor for delinquency (Erikson, 1968). This perspective is in line with social control theory (Hirschi, 1969) expectations that adolescents who have good bonds with parents, teachers, and societal institutions are less likely to be delinquent. A lack of strong bonds or ties to conventional society, as well as the inability to make firm commitments may also reflect inter-individual differences that affect personal capabilities (e.g., impulsivity, lack of future goals or planfulness). Indeed, young people who cannot vividly envision their future self are more likely to make delinquent choices (van Gelder, Hershfield & Nordgren, 2013). And it has also been suggested that adolescents who do not understand how their behaviour is related to the attainment of goals are more likely to be delinquent (Hirschi, 1969). Certainly, identity formation seems to come much more easily for some adolescents (Erikson & Erikson, 1957). Strong bonds to parents or other conventional

institutions may protect adolescents from delinquency by positioning them into conformity, and they may also be indicators of the ability to form identity commitments more easily, without the need for much exploration, and therefore limit opportunities to misstep into delinquency (e.g., Benson, Harris, Rogers, 1992; Meeus, Oosterwegel & Vollebergh, 2002). Therefore, we also expect that identity synthesis may protect against delinquency while identity confusion may promote delinquency.

The Empirical Relation Between Delinquency and Identity

While experimenting with delinquency and personal identity formation processes may be conceptually related, this link has rarely been examined longitudinally or within-persons. Nevertheless, recent between-person cross-sectional research found that externalizing problems and identity were indeed related during adolescence: Adolescents in a juvenile penitentiary reported less commitment, less in-depth exploration, and more reconsideration in comparison to a group of adolescents from the general community (Klimstra et al., 2011). Higher reconsideration was also related to more self-reported delinquency in Dutch adolescents (Crocetti et al., 2008) and higher parent-reported externalizing problems in Japanese adolescents (Hatano, Sugimura & Crocetti, 2016).

In one of the few longitudinal studies to date, externalizing problems in elementary school were related to higher levels of reconsideration in early adolescence (Crocetti, Klimstra, Hale, Koot, & Meeus, 2013). Finally, when identity dimensions (commitment, in-depth exploration, and reconsideration) were combined into identity statuses, adolescents in statuses characterized by low commitment reported more delinquency across four years of adolescence than adolescents in statuses characterized by high commitment (Meeus et al., 2012). Overall, based on current empirical evidence we can conclude that delinquency and externalizing problems have been negatively related to indicators of identity synthesis and positively related to indicators of identity confusion (see also: Schwartz et al., 2009).

Examining Both Between- and Within-Person Associations

In this study, we aimed to examine the longitudinal associations between delinquency and identity across adolescence. Examining both between- and within-person approaches can further increase our understanding of the relation between delinquency and identity in adolescence as these two approaches capture distinct developmental processes. On the one hand, *between-person models* provide information about the rank-order stability within a

group over time (Papp, 2004). More specifically, using delinquency and reconsideration as an example, a between-person model could inform us as to whether adolescents who score higher on reconsideration relative to their peers also score higher on delinquency relative to their peers one year later. Therefore, in between-person models it is necessary to consider the adolescents' scores in relation to the average score of all adolescents (i.e. rank-order stability). On the other hand, *within-person models* provide evidence of the dynamic relation between two variables within one person (Papp, 2004). Therefore, using delinquency and reconsideration as an example, a within-person model could potentially inform as to whether an increase in an adolescent's own score on reconsideration would lead to an increase in the same adolescent's delinquency. Therefore, in within-person models it is necessary to consider adolescents' scores in relation to their own average score (i.e., akin to causal processes).

While previous research has primarily focused on empirically testing between-person differences in the relation between delinquency and identity, delinquency and identity theory also refer to processes occurring within-persons. For example, adolescents with weaker bonds than their peers may be more delinquent than peers with stronger bonds (e.g., between-persons). Similarly, adolescents who report a decrease in their own bonds may subsequently be more likely to be delinquent than when they reported stronger bonds (e.g., within-persons). Therefore, to better understand how the theoretically hypothesized between-person-differences and within-person-changes in delinquency and identity are related across adolescence we addressed both between- and within-person processes in this study.

The Present Study

Building upon the delinquency (i.e., Hirschi, 1969; Moffitt, 1993) and identity (i.e., Crocetti et al., 2008; Erikson, 1950) theories linked above, this study aimed to examine the longitudinal associations between delinquency and identity. We proposed the following between-person hypotheses based on this theoretical link: (a) increased delinquency (relative to peers) may hamper identity synthesis and promote identity confusion (relative to peers); and (b) increased identity synthesis (relative to peers) may protect against delinquency while identity confusion may promote delinquency (relative to peers). We also proposed the following within-person hypotheses based on this theoretical link: (c) increased delinquency (compared to adolescents' own average) may hamper identity synthesis and promote identity confusion (compared to adolescents' own average); and (d) increased identity synthesis (compared to adolescents' own average) may protect against delinquency while identity confusion may promote delinquency (compared to adolescents' own average).

Method

Participants

This study used data from the RADAR-Young project (Research on Adolescent Development and Relationships – Young Cohort), a prospective multi-method, multi-informant, longitudinal cohort study on adolescent development. In the current study, we used 5 waves of data from the RADAR-Young sample, which consists of 497 Dutch families: mother, father, and target adolescent (57% boys; baseline $M_{\text{age}} = 14.03$, $SD = 0.46$)¹. Target adolescents were recruited from 230 schools that were randomly selected from a list of regular primary education schools in the western and central region of the Netherlands. During data collection, participating adolescents were attending secondary school, most of them (85%) lived with both biological parents, were classified as having a medium to high socioeconomic status (89%), and reported their ethnicity as Dutch-Caucasian (97%).

At the last measurement wave (when adolescents were 18 years-old), 425 families (90%) were still participating in the study. We used Little's (1988) Missing Completely at Random (MCAR) test to examine our missing data. Based on the acceptable $X^2 / df = 1.17$ ratio (e.g., Bollen, 1989), we included participants with partially missing data in our analyses and estimated missing data using Full Information Maximum Likelihood (FIML) available in *Mplus* 7.3.

Procedure

Written information was sent to families' homes, and both adolescents and parents provided written informed consent before study participation. Annual assessments were conducted in the target adolescent family homes by trained researchers. Researchers ensured that the battery of paper questionnaires were completely individually and confidentially. The Utrecht University Medical Ethical Board approved this study.

¹ Although data collection for RADAR-Young began at age 13 (2006), identity measures were not included in the study until the second annual assessment at age 14.

Measures

Delinquency

Adolescents' delinquency was rated by three informants: adolescent themselves, their mothers, and their fathers. More specifically, at each measurement wave, adolescents reported on their own delinquency in the past 6 months, using the Dutch version (Verhulst, van der Ende & Koot, 1997) of the 11-item Youth Self Report (YSR) delinquency subscale (Achenbach, 1991). Sample items include "I start fires" and "I steal from places other than home." YSR items were rated on a 3-point Likert scale, ranging from 0 (*not true*) to 2 (*very true*) and then summed to create a total scale.

Mothers and fathers reported on adolescents' delinquency in the past 6 months, using the Dutch version (Verhulst, van der Ende & Koot, 1996) of the 13-item Child Behaviour Checklist (CBCL) delinquency subscale (Achenbach, 1991). Sample items include "My child starts fires" and "My child steals from places other than home." The CBCL items were rated on a 3-point Likert scale, ranging from 0 (*not true of my child*) to 2 (*very true of my child*) and then summed for a total score. Reliabilities at each wave ranged from .70 to .77 for adolescent reports, .70 to .80 for mother reports, and .69 to .78 for father reports. Further, the within-time-point correlations of these three informant scales ranged from .33 to .52, $p_s < .001$ between mother and adolescent, .28 to .41, $p_s < .001$ between father and adolescent and .50 to .68, $p_s < .001$ between mother and father. Therefore, we created a composite multi-informant delinquency score based on the average of the summed total scales for adolescent, mother, and father reports of adolescent delinquency at each of the five annual waves.

Identity

Adolescents reported on their own identity processes using the Dutch version of the Utrecht-Management of Identity Commitments Scale (U-MICS; Crocetti et al., 2008). The U-MICS consists of 26 items with a response scale ranging from 1 (*completely untrue*) to 5 (*completely true*). Thirteen items refer to identity in the educational domain and the other 13 items refer to identity in the interpersonal domain. Sample items include: "My education/best friend gives me certainty in life" (commitment; 10 items), "I think a lot about my education/best friend" (in-depth exploration; 10 items), and "I often think it would be better to try to find a different education/best friend" (reconsideration of commitment; 6 items). Although the U-MICS assesses identity in different domains, these two domains can also be combined to measure overall identity. Previous research demonstrated the internal validity of the three-dimensional model across domains in different gender, age, and ethnic groups and countries using Confirmatory Factor Analyses (e.g., Crocetti et al., 2008; Crocetti et al., 2015; Morsunbul, Crocetti, Cok, &

Meeus, 2014). In this study, Cronbach's alphas across waves ranged between .89 and .90 for commitment, .84 and .85 for in-depth exploration, and .80 and .84 for reconsideration of commitment.

Results

Preliminary Results

We conducted preliminary analyses in SPSS version 22 (IBM Corporation, Armonk, NY, United States). Means and standard deviations are reported in Table 1. We also conducted within-time correlations for delinquency and each of the three identity constructs at each wave. Delinquency was negatively and significantly related to commitment: Correlations ranged between $-.13$ and $-.19$ ($.01 < p_s < .001$). Delinquency was not significantly related to in-depth exploration: Correlations ranged between $.02$ $-.06$ ($p_s > .05$). Delinquency was positively and significantly related to reconsideration: Correlations ranged between $.18$ and $.30$ ($p_s < .001$).

Cross Lagged Analyses

The main aim of this study was to examine whether there is a longitudinal association between delinquency and identity processes across adolescence, and if so, to examine whether the association between them was driven by delinquency, identity, or bidirectionally. Further, because little is known about these developmental processes we examined how delinquency and identity are related over time, both between- and within-persons.

Table 1. Means and Standard Deviations for Delinquency and Identity Processes Across Adolescence

	Age				
	Age 14	Age 15	Age 16	Age 17	Age 18
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Delinquency	2.22 (2.10)	2.38 (2.14)	2.67 (2.23)	2.68 (2.23)	2.64 (2.04)
Commitment	3.68 (0.62)	3.62 (0.65)	3.61 (0.64)	3.62 (0.68)	3.59 (0.70)
Exploration	3.25 (0.63)	3.25 (0.63)	3.19 (0.65)	3.22 (0.64)	3.22 (0.64)
Reconsideration	1.86 (0.76)	1.82 (0.71)	1.89 (0.75)	1.90 (0.78)	1.97 (0.75)

Note. Delinquency was scored on scale from 0 to 24.7, and identity processes on a scale from 1 to 5.

We conducted two different types of cross-lagged panel models (CLPM) between delinquency and identity processes (commitment, in-depth exploration, and reconsideration of commitment): first, standard CLPMs to address between-person associations and second, random-intercept CLPMs to address within-person associations (Hamaker, Kuiper & Grasman, 2015). All cross-lagged analyses were conducted in Mplus version 7.3 (Los Angeles, CA: Muthén & Muthén, United States). We used the maximum likelihood robust (MLR) estimator to account for any non-normality in the variables (Satorra & Bentler, 2001).

In each model we tested for the cross-lagged paths from delinquency to identity and identity to delinquency while controlling for one-year stability paths (e.g., delinquency at age 14 predicting delinquency at age 15) and within-time correlations among all variables. We evaluated model fit using the Comparative Fit Index (CFI), with values above .95 indicating excellent fit, and the Root Mean Square Error of Approximation (RMSEA), with values below .08 suggesting an acceptable fit and values below .05 suggesting a good fit (Byrne, 2012). Further, in order to enhance model parsimony, we tested models where cross-paths from delinquency to identity, and identity to delinquency (M2), and T2-T5 within-time correlations (M3) were constrained to be time-invariant. Finally, we tested a model with all cross-paths and T2-T5 within-time correlations constrained to be time-invariant (M2+M3=M4). These models were compared to the unconstrained baseline model (M1). In order to determine significant differences between models at least two out of these three criteria had to be met: ΔX_{SB}^2 is significant at $p < .05$ (Satorra & Bentler, 2001); $\Delta CFI \geq -.010$; $\Delta RMSEA \geq .015$ (Chen, 2007).

Table 2 presents the fit and model comparison results for each of our models. In all cases, the constrained models fit the data well. Therefore, we reported the most parsimonious models (M4) as our final models².

Between-Person Cross-Lagged Analyses

Using the between-person cross lagged panel models, we were able to assess the extent to which scoring relatively high or low on identity at age 14 compared to peers predicted scoring relatively high or low on delinquency at age 15, after controlling for prior delinquency at age 14. Cross-lagged paths presented in Figure 1 show that delinquency predicted decreased commitment and increased reconsideration of commitment, but was unrelated to in-depth exploration over time.

2 The between-person CLPMs were also tested including gender and parents' occupation level (SES) as covariates. Delinquency and the three identity constructs were regressed on gender and SES at each time point, therefore removing all shared variance between covariates, delinquency, and identity. The results from these models were very similar to the more parsimonious models presented here.

Table 2. Fit Indices and Model Comparisons for Between- and Within-Person Cross Lagged Panel Models

	Model Fit Indices					Model Comparisons				
	χ^2_{sb}	df	CFI	RMSEA [90% CI]	Models	$\Delta\chi^2_{sb}$	df	p	ΔCFI	$\Delta RMSEA$
Between-Person CLPM										
M1: Baseline	281.63	120	.943	.053 [.045, .061]						
M2: Time Invariant Cross Lags	303.91	138	.942	.050 [.042, .057]	M2-M1	26.86	18	0.08	-0.001	-0.003
M3: T2-T5 Time invariant within-time correlations	290.52	138	.946	.048 [.040, .055]	M3-M1	15.90	18	0.81	0.003	-0.005
M4: M2+M3	312.46	156	.945	.045 [.038, .053]	M4-M1	31.54	36	0.62	0.002	-0.008
Within-Person CLPM										
M1: Baseline	100.11	110	1.00	.000 [.000, .018]						
M2: Time Invariant Cross Lags	125.24	128	1.00	.000 [.000, .021]	M2-M1	25.53	18	0.11	0.000	0.000
M3: T2-T5 Time invariant within-time correlations	118.08	128	1.00	.000 [.000, .017]	M3-M1	17.74	18	0.47	0.000	0.000
M4: M2+M3	141.07	146	1.00	.000 [.000, .019]	M4-M1	40.51	36	0.28	0.000	0.000

Note. χ^2 = Chi-Square; df = degrees of freedom; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Interval; Δ = change in parameter. $\Delta\chi^2_{sb}$ model comparisons are based on Satorra and Bentler's (2001) scaled difference chi-square test statistic.

The cross-paths from the three identity constructs to delinquency were non-significant. Table 3 presents the one-wave stability paths. Regarding within-time model associations (e.g., correlated change), at age 14 delinquency was negatively correlated with commitment ($r = -.17, p < .001$), not significantly related to in-depth exploration ($r = .00, p > .05$), and positively correlated with reconsideration ($r = .23, p < .001$). At ages 15 to 18, only delinquency and reconsideration continued to be significantly and positively related ($r = .11, p < .001$).

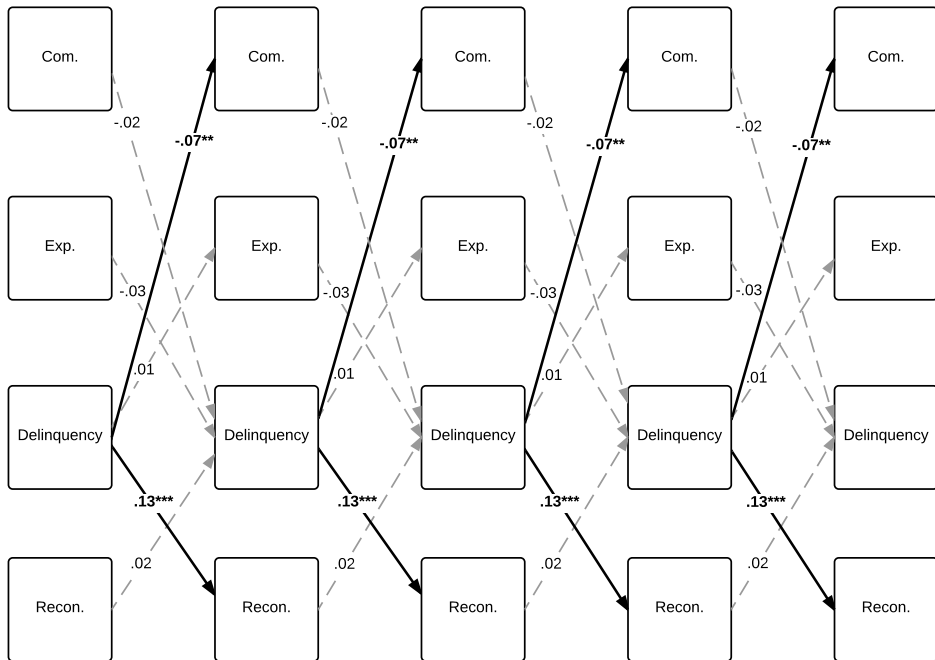


Figure 1. Standardized cross paths between delinquency and identity constructs for the final between-person CLPM (M4). The model includes concurrent associations, time invariant cross paths, time invariant within-time correlations, and one-wave stability paths. *** $p < .001$, ** $p < .01$, * $p < .05$.

Within-Person Cross-Lagged Analyses

Using random intercepts cross-lagged panel models (RI-CLPM; see Hamaker et al., 2015 for a detailed overview), we included random intercepts for each construct (i.e., a factor with all loadings constrained to 1) to partial out stable between-person variance, so that the cross-lagged paths only refer to within-person dynamics. With regards to the between-person variance portion of this model, Figure 2 shows that the time-invariant individual differences (i.e., the random intercepts) for delinquency and reconsideration

were positively correlated, as were those between commitment and exploration. Reconsideration and commitment were negatively correlated.

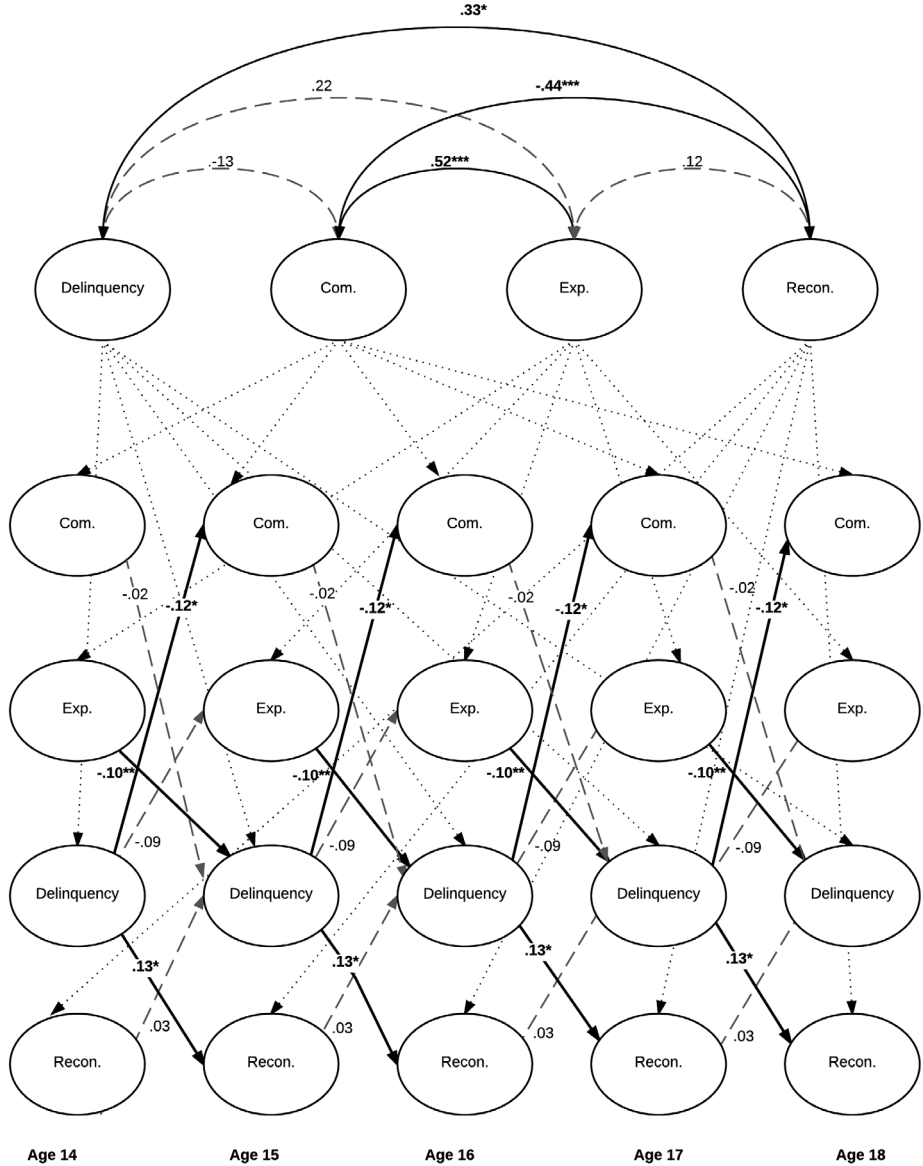


Figure 2. Standardized cross paths and correlations between time-invariant between-person latent variables for delinquency and identity constructs for the final within-person CLPM model (M4). The model includes time-invariant concurrent associations, time-invariant cross paths, and one-wave stability paths. *** $p < .001$, ** $p < .01$, * $p < .05$.

Table 3. Standardized Autoregressive Coefficients for One-Wave Stability in Final Models

Between-Person CLPM	One-Wave Stability Paths			
	Age 14-15	Age 15-16	Age 16-17	Age 17-18
Delinquency	.73***	.78***	.76***	.79***
Commitment	.44***	.51***	.53***	.53***
Exploration	.45***	.45***	.51***	.57***
Reconsideration	.34***	.44***	.39***	.43***
Within-Person CLPM				
Delinquency	.52***	.62***	.61***	.64***
Commitment	.08	.20**	.22**	.28***
Exploration	.10	.11	.26***	.34***
Reconsideration	.18**	.30***	.21**	.27***

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

Because between-person variance has been partialled out by the inclusion of the random intercept the rest of the model refers to within-person development. The cross-lagged paths presented in Figure 2 show that when an adolescent had a higher level of delinquency in the prior year than they usually have, they reported increased reconsideration (i.e., greater identity confusion) and decreased commitment in the following year. Therefore, these associations between delinquency, reconsideration and commitment are similar in the between- and within-person models. However, in the RI-CLPM we also found cross-lagged effects from identity to delinquency: increased exploration predicted decreased delinquency one year later. One-wave stability paths are reported in Table 3. Regarding the within-time model associations (e.g., correlated change), at age 14, delinquency was negatively correlated with commitment ($r = -.17$, $p < .05$), not significantly related to in-depth exploration ($r = -.15$, $p = .08$), and positively correlated with reconsideration ($r = .17$, $p < .05$). Only delinquency and reconsideration continued to be significantly related from ages 15 to 18, ($r = .13$, $p < .01$).

Discussion

In this study we aimed to provide a global overview of how between-person-differences and within-person-changes in delinquency and identity are related across adolescence. We conducted between- and within-person cross-lagged panel models in a five-wave sample of 497 adolescents to examine theoretically integrated hypotheses: increased delinquency (i.e., relative to peers or relative to adolescents' own average) may hamper identity synthesis and promote identity confusion (i.e., relative to peers or relative to

adolescents' own average); and increased identity synthesis (i.e., relative to peers or relative to adolescents' own average) may protect against delinquency while identity confusion may promote delinquency (i.e., relative to peers or relative to adolescents' own average).

Our findings imply that adolescents who are more delinquent than other adolescents are more likely to report increased identity confusion in comparison to these others. However, our findings also imply that adolescents who show an increase in their own delinquent behaviour are also more likely to report increased identity confusion than when their delinquency had remained stable. Relatedly, we also found some support for the hypothesis that identity synthesis protects against delinquency as increased in-depth exploration predicted a decrease in adolescents' own delinquency one year later. Overall, our results suggest that delinquency promotes identity confusion in adolescence. And while the most delinquent adolescents are certainly in need of attention, our results indicate that within-adolescent increases in delinquency also warrant attention. Finally, promoting within-adolescent increases in in-depth exploration may help prevent future adolescent delinquency.

Delinquency Promotes Identity Confusion

We had expected that delinquency could lead to identity confusion if adolescents who are in the process of differentiating themselves from their childhood identifications used delinquency to exert autonomy, independence, and explore possible identity alternatives. Our findings provided strong support for our hypothesis that delinquency may hamper identity synthesis and promote identity confusion. Specifically, the between-person analysis indicated that on average adolescents who scored higher than their peers on delinquency also scored higher than their peers on reconsideration, and lower on commitment one year later. The within-person analysis indicated that adolescents who report delinquency higher than their own average report more reconsideration and less commitment in comparison to their own average, one year later. These relations between delinquency, reconsideration and commitment are consistent with previous research that found a positive relation between delinquency and identity confusion (e.g., Schwartz et al., 2005; Schwartz et al., 2008) and delinquency and reconsideration (e.g., Crocetti et al., 2008; Crocetti et al., 2013; Klimstra et al., 2011) and a negative relation between delinquency and commitment (Klimstra et al., 2011; Meeus et al., 2012). Our results further build on these studies by providing longitudinal evidence of a developmental order from delinquency to identity.

It is worth noting that delinquent behaviour does not guarantee that an adolescent will be ensnared into a trajectory leading to identity confusion. Indeed, reconsideration of current commitments in comparison to potential alternatives can be desirable or adaptive when current commitments are not appropriate (Klimstra et al., 2010). Therefore, we also suggested that adolescents who engage in delinquency are not only ensnared into identity confusion because they are unsure of their commitments or labeled into a delinquent identity, but *also* because they are missing conventional goals to which they could reorientate or commit. Indeed, this absence of suitable alternatives could also be one of the ensnaring consequences of delinquency (e.g., Moffitt et al., 2002; Siennick & Staff, 2008; Warr, 2007) such as school failure or damaged relationships that may decrease both commitment making as well as adolescents' possibilities for conventional alternatives or goals.

While delinquency may lead to identity confusion by decreasing the number of conventional alternatives to which adolescents can commit either by means of labeling or other ensnaring consequences of delinquency such as school failure and damaged relationships, we propose that our findings could also be explained by the notion that delinquent adolescents may simply be incapable of forming the stable commitments associated with identity formation. This idea is supported by previous research on identity styles. For instance, identity styles research proposes three different ways (informational, normative, and diffuse-avoidance styles) in which adolescents can approach identity-relevant tasks (Berzonsky, 1990). Adolescents who engage in the diffuse-avoidance identity style typically avoid dealing with their identity issues, instead defining themselves in terms of social attributes such as reputation and popularity (Berzonsky, Macek & Nurmi, 2003). Further, the diffuse-avoidance identity style has been associated with both lower commitment and higher reconsideration (Crocetti, Rubini, Berzonsky & Meeus, 2009) as well as increased externalizing problems (Adams, Munro, Munro, Doherty-Poirer, & Edwards, 2005). These adolescents also tend to lack self-awareness and display high levels of self-handicapping, impulsivity, and behave in accordance with situation-specific demands in contrast to planned behaviours (Berzonsky, 2008; Berzonsky & Ferrari, 2009). This explanation is further consistent with the finding that delinquent adolescents do not make concrete investments in their educational goals, and in the meanwhile tend to overestimate their own academic achievements (Siennick & Staff, 2008). Naturally, this combination of lack of investment and over-evaluation results decreases the likelihood of successful goal attainment. Therefore, while it is possible that adolescents do not understand the consequences of their own delinquency and are ensnared due to the resulting labeling and other consequences, it seems even more likely that delinquent adolescents lack the skills and self-awareness to adequately position themselves in society in order to achieve concrete goals and make firm identity commitments. Future research

should test these two alternative explanations for the finding that between-person-differences *and* within-person-changes in delinquency promote identity confusion.

Identity Synthesis Protects Against Delinquency

Our second theoretically-based hypothesis was that identity synthesis might protect adolescents from engaging in delinquency. Adolescents who have good bonds with parents, teachers, and societal institutions are less likely to be delinquent and adolescents with these ties to society are hypothesized to better understand the consequences of potential delinquency on their goals (Hirschi, 1969; Hoeve et al., 2012). In fact, already having strong bonds may even represent an ability to make firm identity commitments more easily as attachment and identity commitment have been positively related (Meeus et al., 2002). Our results provided modest evidence in support of this hypothesis within-persons: more in-depth exploration (i.e., one aspect of identity synthesis) predicted adolescents' own decreased delinquency one year later.

Based on this finding we suggest that an active effort to move towards identity synthesis by engaging in in-depth exploration may protect adolescents from delinquency. These adolescents may avoid delinquency in order to avoid jeopardizing the potential to form goals or make firm commitments in the near future. This explanation is also supported by previous research on identity styles (i.e., Berzonsky, 1990). For instance, the informational style is generally related to high self-reflection, high self-regulation, being effortful and deliberate in pursuit of an own identity, and actively working to meet their own personal standards and goals (Berzonsky & Ferrari, 2009; Berzonsky et al., 2011; Soenens et al., 2005). Further, the informational style has been strongly related to higher levels of in-depth exploration in adolescence (Crocetti et al., 2009). In this regard, encouraging adolescents to increase their own in-depth exploration, resulting in within-adolescent changes, may provide a manageable short-term goal which in turn increases their own engagement in identity formation and decreasing willingness or likelihood to misstep (e.g., delinquency) in their search for alternative possibilities.

Strengths, Limitations, and Suggestions for Future Research

This study was the first to test the longitudinal association between delinquency and identity formation both between- and within-persons using a multi-informant five wave sample of adolescents. Nevertheless, we have three suggestions for ways in which future research could improve and extend upon this study. First, we encourage

future research to examine if the longitudinal association between delinquency and identity is the same across different subgroups of delinquent adolescents. For example, the developmental taxonomy (Moffitt, 1993) is a group-based theory in which the large majority of adolescents are hypothesized to engage in the adolescence-limited behaviour described in this paper. However, this theory also includes a small group of life-course-persistent delinquents for whom delinquency is hypothesized to have different antecedents, as well as a small group of adolescent delinquency abstainers who manage to avoid delinquency altogether. Future research could examine whether or not these processes are indeed the same across different groups of (non)-delinquent adolescents (e.g., Mercer, Keijsers, Crocetti, Branje & Meeus, 2016).

Second, this study was conducted in a sample of relatively homogeneous adolescents from a medium-to-high socioeconomic background and future studies should replicate these results in different groups of adolescents from different minority groups or clinical samples using different measures of delinquency and externalizing problems to determine if our results can be further generalized.

Finally, the main aim of this study was to test if the theoretical link between delinquency and identity could be empirically supported across adolescence and to determine what the developmental order of that link would be. Now that this first link has been established both between- and within-persons, future studies could aim to test the mechanisms underlying this developmental order. Understanding how delinquency leads to increased identity confusion and how exactly in-depth exploration may prevent adolescent delinquency would be highly informative for practical implications of these findings.

Conclusion

Linking adolescent delinquency to the main developmental task of identity formation, we found that experimenting with delinquency hampers identity formation by increasing reconsideration and decreasing commitment between- and within-adolescents. Therefore, even if adolescent delinquency is more common and less pathological than delinquency at other ages it still impedes the main developmental task of identity formation. And while the most delinquent adolescents are certainly in need of attention, within-adolescent increases in delinquency also warrant attention. Certainly, future research should consider identity confusion as one of the potentially ensnaring consequences of adolescent delinquency. Additionally, within-persons increased in-depth exploration of identity commitments led to less delinquency over time. Therefore, interventions tailored to increase in-depth exploration in adolescents may aid in preventing adolescent delinquency.

CHAPTER 3

An Experimental Investigation of the Influence of Deviant Peers*

Mercer, N., Crocetti, E., Meeus W., & Branje, S. An Experimental Investigation of the Influence of Deviant Peers: A Replication Study. *Revise and Resubmit.*

* N.M. conceptualized the study. N.M. and S.B. wrote and registered research protocol with ethical committee. N.M. oversaw data collection, analyzed the data, and wrote the manuscript. E.C., S.B., and W.M. provided feedback on the analyses and manuscript.

Abstract

The current study aims to replicate the finding that a brief exposure to deviant peers has a causal impact on own deviant behaviour (i.e., Paternoster, McGloin, Nguyen & Thomas, 2013). We re-tested this experimental design using different monetary incentives and a female deviant peer. A total of 69 university students (61% female) from The Netherlands participated in this laboratory-based study ($M_{age} = 20.64$; $SD = 2.00$) under the façade of a study on individual differences predicting memory recall. Participants could earn up to 10 euro. All participants had the opportunity to cheat to illegitimately earn more money (deviancy). Participants in the experimental condition were exposed to a deviant peer who verbalized her intention to cheat, justified this behaviour, and then visibly cheated on the memory recall task. Although participants in both conditions engaged in some deviancy, the brief exposure to a deviant peer significantly increased the *amount of deviancy* compared to participants who were not exposed to a deviant peer. These results were consistent after controlling for different demographic and theoretical control variables that are known to predict deviancy. Although not identical in magnitude, our results echo those found in Paternoster et al. (2013): Even a brief exposure to a previously unknown deviant peer increases the amount of deviant behaviour in young adults. Future research should examine factors predicting the susceptibility to (different types and thresholds of) deviant peer influence.

Introduction

Peer deviance is one of the most robust predictors of one's own deviance (Pratt et al., 2010). Researchers have studied the role of deviant peers and the mechanisms by which they have influence for decades (e.g., Agnew, 1991; Warr and Stafford, 1991; Young, Rebellon, Barnes & Weerman, 2015). But much of this research is correlational, based on self-reported own deviancy and perceived peer deviancy, and is consequently confounded by the possibility of selection effects and projection bias. Therefore, this study aimed to contribute to the small body of experimental research on the influence of deviance peers by replicating previous work that examined the causal effect of a brief exposure to a deviant peer on own deviancy (i.e., Paternoster, McGloin, Nguyen & Thomas, 2013).

The Need for Experimental Studies of Peer Deviancy

While the relation between (perceived) peer deviancy and own deviancy is a robust, well-established criminological finding (e.g., Pratt et al., 2010), the meaning of this relation has been subject to much debate due to numerous methodological and theoretical challenges. First, control theorists have argued that the relation between peer delinquency and own delinquency is simply a matter of selection (e.g., Gottfredson and Hirschi, 1990). Indeed, perceived similarity breeds liking and intensity relationships (Selfhout, Dennisen, Branje & Meeus, 2009). Although longitudinal studies can provide evidence for the direction of effects from delinquency to deviant peers or vice versa, these studies cannot fully account for plausible selection effects related to, for example, any underlying similarities in criminal propensity. And while longitudinal social network analyses are better equipped to tackle the issues of selection or influence in peer similarity as well as the direction of causality, overall results from these studies vary greatly and are mostly mixed (e.g., Veenstra and Dijkstra, 2011).

Second, is the issue of the measuring peer delinquency. While much research conducted on deviant peers has used perceived measures of peer delinquency (e.g., Pratt et al., 2010), recent research has found that these perceptions are highly inaccurate, and are more related to self-projection and bias than to actual peer delinquency (e.g., Young and Weerman, 2013; Young et al., 2015). Not surprisingly, own delinquency seems to be more strongly correlated with perceived peer delinquency than with actual peer delinquency (Weerman and Smeek, 2005). Third, even if actual exposure to delinquent peers indeed precedes increases in own delinquency, we still cannot be certain of the underlying mechanism that leads to their influence. Research needs to pinpoint and examine potential mechanisms more specifically to distinguish between theoretically

proposed competing or complementing mechanisms such as direct peer pressure, behavioural modeling, positive reinforcement or changes in routine activities.

Therefore, while methodological advances are coming closer to solving these ongoing debates, experimental studies can supplement this research by addressing some of these methodological challenges. While experimental studies are not without their own limitations (e.g., external validity) they can eliminate selection effects and projection bias. Further, random assignment should ensure that characteristics of those exposed to deviant peers do not differ from those who are not, and manipulating peer deviancy and its mechanism of influence can shed light on the exact process(es) by which exposure to deviant peers influences own behaviour.

Previous Experimental Research on Peer Deviancy

Although criminologists have called for increased experimental work to test criminological theories (Farrington and Welsh, 2005), only a few studies to date have directly examined the role of deviant peers on own deviancy using an experimental design (e.g., Gallupe et al., 2016; Paternoster et al., 2013). While the experimental social psychology literature has multitudes of studies that examine peer influence on various behavioural outcomes (see: Paternoster et al., 2013 for an overview), the outcomes of interest are often not comparable to (minor) delinquent acts. Similarly, developmental research has also conducted studies on the influence of (deviant) peers on risk-taking behaviour and risky decision-making behaviour (e.g., Gardner and Steinberg, 2005; MacLean, Geier, Henry & Wilson, 2014; Smith, Chein & Steinberg, 2014; van Hoorn, Crone & Leijenhorst, 2016). However, these studies either manipulated the presence of peers, or their risk-averse attitudes, but not their actual deviant behaviour.

In the study by Paternoster et al. (2013) participants were told they could earn 1 dollar for every correct word on a memory recall task up to 20 dollars. All participants were given an opportunity to illegitimately earn this money by clicking on links in which the memory recall words were revealed. In the experimental condition, participants were exposed to a deviant peer who justified this illegitimate use of the links, verbalized his intention to use them, and then modeled deviancy by openly clicking on all of the links to unjustly “recall” more words. Further, Gallupe et al. (2016) used similar design but increased the seriousness of the outcome by providing an opportunity to steal a 15-dollar gift card. Both studies found that exposure to a deviant peer led to deviancy. Given that these studies are among the first laboratory-based-experimental studies to examine the influence of deviant peer *modeling* in criminology, replication, and generalizability tests are warranted (see also: Open Science Collaboration, 2015).

The Current Study

The aim of this study was to replicate the effect of a brief exposure to a deviant peer found in Paternoster et al. (2013), using the same design in a different sample. Further, in our study there were small methodological differences: a different monetary award for deviancy, a female experimenter, and a female deviant peer. These differences test the replicability and generalizability of a brief exposure of deviant peers to contexts and characteristics beyond those of the original study.

Method

Participants

A total of 69 students (61% female) were recruited from Utrecht University (88%) and the HU University of Applied Sciences (12%) located in The Netherlands ($M_{\text{age}} = 20.64$; $SD = 2.00$; range 18-26). The majority of students indicated their ethnicity to be Dutch (91%). Participants were recruited for a study on “individual differences in memory recall” using posters located across campuses, online advertisements, and flyer handout on the date of the experiment. The study took place in a 22-person computer lab at the Utrecht University on one day in April 2015. There were 6 sessions with a minimum of 6 and a maximum of 16 participants in each session. Participants signed up for a specific timeslot on the basis of their availability and these timeslots were randomly assigned to be three experimental ($n = 33$) and three control ($n = 36$) conditions a priori. Only the lead researcher and the peer confederate knew which sessions were assigned to be which in order to avoid any accidental bias from the experimenter. Informed consent was obtained from all participants. The Utrecht University Faculty of Social Sciences Ethical Committee approved this study.

Procedure

This procedure is a replication of Paternoster et al. (2013). The online survey was programmed in UniPark (Questback) software. The study involved three phases: In the first phase, the experimenter read a list of 20 words that participants had to recall at the end of the experiment. The experimenter informed participants that for every word they recalled they would earn 50 cents to a maximum of 10 euro. In the second phase, following the reading of the memory recall words, participants were asked to fill out an

online survey with demographic information and control variables. Additionally, in line with the premise of a memory recall study participants were asked two questions about the perceived memory ability. These questions were: “In general, I have a good short-term memory” and “In general, I have a good long-term memory” (1 = *completely disagree* to 5 = *completely agree*). Participants had 8 minutes to fill out the survey questions. They were asked to wait for further instruction from the experimenter before proceeding to the next screen so that all participants would have the same amount of recall time. In the third phase, after the 8 minutes had passed, the experimenter then demonstrated how to correctly enter the recall words into the online platform. First, the experimenter asked all participants to click on the survey link to “enter recall words” in the online survey. The experimenter then acted surprised to see that there were four random links on the recall page of the survey. The experimenter clicked on the links on her computer and announced that these links were erroneously included on the recall page, as they contained the lists of words to be recalled. She then checked to confirm whether participants also had these links in their survey. Upon finding that they did, the experimenter then announced that this was a software bug – and reminded participants that the purpose of the experiment is to recall as many words as possible from memory – and not to use the links. The experimenter then left the room to find someone who could assist with removing the links before the next session.

In order to not “delay the session,” the experimenter asked participants to proceed with the 5-minute recall session while she was gone. By doing so, she presented an opportunity to cheat on this task and earn money illegitimately. In the experimental condition, when the experimenter left the room the deviant peer confirmed the possibility for deviance, provided a justification, and then was openly deviant. The following script was used:

“That lady was right, you can see the words if you click on the links. I’m going to use them. I thought we were guaranteed 10 euros and not that it would be 50 cents for each word, so I’m using the links.”

The deviant peer then openly cheated by clicking on all four links and subsequently entering the words on the computer screen. In the control condition, the deviant peer sat at the same computer but said nothing and participated in the study as instructed. Finally, in both conditions, after the 5-minute recall period ended, the experimenter returned and explained that because of the problems with the software and links she no longer had time to count the number of correct words, so all participants will receive 10 euro as compensation for their time. The total experiment took approximately 20-25 minutes.

Participants received a debriefing e-mail one week after the study was conducted. They were informed of the true purpose of the study, as well as the possibility to consult the researchers for any questions or concerns. None of the participants contacted the researchers.

Measures

Deviancy

Deviancy was measured by the number of links that were clicked on (*min* = 0 to *max* = 4). Clicking on the link, not only clearly violated the objective of the study, but also enabled the participant to illegitimately earn money. This deviancy can therefore be considered as cheating but also as petty theft.

Theoretical Control Variables

Four control variables were included in this study based on theoretical hypotheses and empirical evidence that has shown them to predict (a lack of) deviancy and delinquency.

Personality

Conscientiousness was measured using a shortened version of Goldberg's Big Five Personality Questionnaire (Gerris et al., 1998). This 6-item subscale includes items such as "I am accurate" (1 = *completely untrue* to 7 = *completely true*) and was included as delinquency abstainers are thought to possess personality characteristics that aid them in avoiding delinquency (Moffitt, 1993), such as conscientiousness (Mercer, Keijsers, Crocetti, Branje & Meeus, 2016). Reliability was very good ($\alpha = .90$).

Parental Support

Parental support was measured using the 6-item support subscale of the Network of Relationships Inventory (Furman and Buhrmester, 1985). The scale includes items such as "To what extent does your parent help you figure out or fix things?" (1 = *little to not at all* and 5 = *as much as possible*). Reliability was very good ($\alpha = .90$). This measure was included because bonds with parents are thought to prevent delinquency (Hirschi, 1969); and delinquency abstainers reported higher parental support (Brezina and Piquero, 2007).

Importance of Peers and School Achievement

Additionally, following Paternoster et al. (2013) we also asked participants how important friends and school were to them, which may be related to both cheating and vulnerability to deviant peer exposure (Hirschi 1969; Moffitt, 1993). "How important is it to you that you have lots of friends?" and "how important is it to you that you do well in school?" (1 = *not at all* important and 5 = *very important*).

Results

Table 1 provides an overview of the demographic and control variables for the total sample and each condition. Because classroom sessions and not individual participants were randomly assigned to be experimental or control, it was necessary to check if participants in either condition differed on important variables. Overall, the experimental and control conditions were very similar; the only significant difference was that there were only native-Dutch participants in the experimental condition whereas the control condition was comprised of both native-Dutch and non-native ($n = 6$) Dutch participants¹.

Deviancy

We conducted zero-inflated poisson (ZIP) regression analyses in Mplus 7.3 in order to determine if a brief exposure to a deviant peer increased the amount of deviancy (total number of links clicked) as well as the likelihood of any cheating (clicking on zero links; non-deviant). We used cluster-robust standard errors in order to account for any non-independence of observations introduced by collecting data in six sessions. This analytical technique is a more conservative test of the effect of an exposure to a deviant peer.

Table 1. Descriptive Statistics for the Total Sample and Two Conditions

	Total Sample $n = 69$		Control $n = 36$		Experimental $n = 33$		<i>t</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Female	0.61	0.49	0.58	0.50	0.64	0.49	-0.45
Age	20.64	2.00	20.39	1.66	20.91	2.31	-1.07
Dutch	0.91	0.28	0.83	0.37	1.00	0.00	-2.65*
Importance of School	4.13	0.54	4.11	0.58	4.15	0.51	-0.31
Importance of Friends	3.55	0.68	3.56	0.61	3.55	0.75	0.06
Conscientiousness	4.71	1.16	4.78	1.05	4.63	1.27	0.52
Support	3.60	0.68	3.66	3.55	3.55	0.68	0.65

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

Table 2 presents the results of the ZIP-regression analyses. Model 1 shows that exposure to a deviant peer increased the total number of links clicked, and therefore leads to increased deviancy.

1 Ethnicity is not included as a control variable in the total model as every non-native Dutch participant had a zero value on the dependent variable. The ZIP models produce computational errors in this case. However, the results did not change when these 6 non-native Dutch participants were removed from the analyses.

Table 2. Zero-Inflated Poisson Regressions for Deviant Peer Exposure Predicting the Amount of Deviancy and the Probability of Being a Non-Cheater

	Amount of Deviancy				Non-Cheater				Amount of Deviancy				Non-Cheater			
	B	SE	B	IRR	B	SE	B	IRR	B	SE	B	SE	B	SE	B	OR
Deviant Peer Exposure	0.82*	0.40	2.28		-0.50	0.55	0.61		1.19**	0.35	3.30		-0.50	1.03	0.61	
Female									-0.57	0.58	0.57		-0.62	1.46	0.54	
Female									-0.57	0.58	0.57		-0.62	1.46	0.54	
Age									-0.02	0.06	0.98		0.07	0.18	1.08	
Importance of School									0.45	0.35	1.57		-0.80	1.02	0.45	
Importance of Friends									-0.53	0.47	0.59		-0.78	2.18	0.46	
Conscientiousness									-0.17	0.33	0.84		-0.02	0.75	0.99	
Support									0.10	0.23	1.11		-0.82	0.56	0.44	

Note. ***<.001, **<.01, *<.05. IRR = Incidence Rate Ratios. OR = Odds Ratios. Deviant peer exposure was the experimental condition. Amount of deviancy is the number of links clicked. Probability of being a non-cheater is the zero-inflated parameter predicting a zero score.

Confidence Intervals for Deviant Peer Exposure: Model 1 95% C.I._{IRR} [1.04, 4.97], 95% C.I._{OR} [0.20, 1.78]. Model 2 95% C.I._{IRR} [2.92, 3.71], 95% C.I._{OR} [0.08, 4.59].

However, exposure to a deviant peer did not predict who would be a non-deviant (zero-inflation parameter, likelihood of clicking on zero links). Overall, 28% of participants engaged in deviancy by clicking on one or more links in the online experiment. However, unlike in Gallupe et al. (2016) and Paternoster et al. (2013) deviancy was not limited to those who were exposed to a deviant peer. In the control condition, 7 out of 36 participants (19%) clicked on one or more links. Of the 33 participants exposed to a deviant peer 12 (36%) engaged in deviancy by clicking on one or more links. Model 2 shows that these results remain after the addition of demographic and theoretical control variables related to delinquency. None of the control variables significantly predicted deviancy.

Sensitivity Analyses

Following Paternoster et al. (2013), we examined if the number of words correctly recalled was related to the number of links clicked in order to test whether clicking on the links was actually representative of deviancy and not just curiosity. Indeed, the number of links clicked significantly predicted the number of words correctly recalled after controlling for all demographic and theoretical variables ($\beta = .79$; $p < .001$). Further, participants exposed to a deviant peer recalled significantly more words ($M = 9.21$; $SD = 4.65$), than those in the control condition ($M = 7.31$; $SD = 2.36$), $t(1, 46.58) = -2.17$ $p < .05$; $d = 0.52$. Additionally, of those who actually clicked on the links, participants in the control condition recalled significantly fewer words ($M = 8.29$; $SD = 3.15$) compared to those who cheated in the experimental condition ($M = 13.75$; $SD = 4.27$), $t(1, 17) = -2.94$, $p < .01$, $d = 1.46$. Therefore, it seems that participants exposed to a deviant peer were more purposeful in their intent to click on (more) links in order to illegitimately earn more money (i.e., increase the *amount of deviancy*) than cheaters in the control condition.

Discussion

In this study, we replicated previous work (Paternoster et al., 2013) showing that a brief exposure to a deviant peer *increased the amount of deviancy* participants engaged in. However, unlike the original study, we did not find that only participants exposed to a deviant peer engaged in deviancy. Nevertheless, this replication study further generalizes this design and its conclusions regarding the influence of a deviant peer on the amount of deviancy to additional conditions and populations.

While the results of our study were more modest than those in the original study (Paternoster et al., 2013), these cannot be attributed to the use of a female deviant peer,

as the percentage of people who cheated after exposure to the deviant peer were highly comparable between both studies (36% versus 38% in Paternoster et al., 2013). Rather, we think that the use of a female deviant peer was a strength of this replication study. By varying the gender of the deviant peer from the original experiment we were able to further generalize the nature and strength of deviant peer influence.

Instead, the differences between our studies were the result of people also cheating in the control condition. While we do not have a definite answer for why some participants in the control condition cheated in our study but not in Paternoster et al., 2013 nor in Gallupe et al., 2016, these results are not theoretically implausible. Peer deviancy is a strong predictor of own delinquency, however, it is not the only predictor of own delinquency (e.g., Pratt et al., 2010). Further, the opportunity to cheat in both conditions was inherent to the study design and a randomized design does not preclude that some predictors of delinquency may be exacerbated by the presence of a deviant peer, and therefore, related to both deviancy in the control condition and to susceptibility to deviant peer influence increasing the amount of deviancy after exposure to a deviant peer. Therefore, future research should employ a similar experimental design, in a much larger sample size, to also examine factors that might increase the susceptibility to deviant peers.

That being said, we also have two speculative methodological explanations for why this difference between studies may have occurred. First, a female experimenter conducted our study. While we are not sure exactly why this would impact cheating in the control condition, it could well be that specific characteristics of the experimenter may play an additional role in explaining deviant behaviour. Future research should examine this possibility by varying experimenter characteristics.

Second, participants may have decided there was a threshold of money that would be worth their time or risk. For example, the average number of words recalled by a non-cheater would have earned them between 3 and 4 euro². Therefore, participants in both conditions may have felt more entitled to cheat in order to earn additional money for their time. Alternatively, we could also hypothesize that because the reward for deviancy was lower in our study, motivation to cheat may also be lower. Therefore, we cannot be certain in which way the monetary value per word impacted the results. Future research should examine this by including conditions that vary only in their reward for deviance, including examining the threshold at which peer deviancy would no longer have an influence on own deviancy (e.g., Miller, 2010).

Relatedly, in this study we examined the exposure to one deviant peer. Research should also consider different combinations of deviancy that might better reflect a

2 It should be noted that in social science research conducted at the university it is not unusual to earn 3-5 euros per 30 minutes. So while this is a small amount of money, it is consistent with the standard for participating in research.

naturalistic peer group. For instance, what would happen to deviant peer influence in situations where peer deviancy is inconsistent (pro- and antisocial group members) versus overwhelmingly deviant (e.g., Asch, 1956; Milgram, 1963) and how these different deviant peer combinations impact the threshold of deviancy to which participants allow themselves to be influenced. Indeed, recent experimental work found that theft of a gift card increased when two deviant peer confederates were present compared to only one (Gallupe et al., 2016).

Conclusion

In conclusion, this study replicates the rather noteworthy finding that a very brief exposure to the deviant modeling by a previously unknown peer subsequently increases the *amount of deviant* behaviour in young adults. However, we did not replicate the finding that only participants who exposed to a deviant peer engaged in deviancy. Future research should try to experimentally examine predictors of delinquency that are particularly susceptible to being exacerbated by the influence of a deviant peer as well as any plausible thresholds for the influence of deviant peer modeling on own deviancy.

CHAPTER 4

Examining the Mediating Role of Time Spent with (Delinquent) Peers*

Mercer, N., Keijsers, L., Crocetti, E., Branje, S., & Meeus, W. (2016). Adolescent abstention from delinquency: Examining the mediating role of time spent with (delinquent) peers. *Journal of Research on Adolescence*, 26, 942-962. doi: 10.1111/jora.12246

* N.M. and L.K. conceptualized the study. N.M. analyzed the data and wrote the manuscript. L.K., E.C., S.B., and W.M. provided feedback on the analyses and manuscript.

Abstract

Research consistently identifies a group of adolescents who refrain from minor delinquency entirely. Known as “abstainers,” studying these adolescents is an underexplored approach to understanding adolescent minor delinquency. In this paper, we tested hypotheses regarding adolescent delinquency abstention derived from the developmental taxonomy model and social control theory in 497 adolescents (283 boys) aged 13–18 comparing three groups of adolescents: abstainers, experimenters, and a delinquent group. We found that the relation between adolescent abstention and personal characteristics (i.e., conscientiousness and anxiety) was (partially) mediated by the amount of time spent with peers. Furthermore, the level of best friend delinquency moderated the relation between time spent with peers and delinquency abstention. Results support aspects of both theoretical frameworks.

Introduction

Minor delinquency is often considered normative during adolescence (Moffitt, 1993; Roisman, Monahan, Campbell, Steinberg & Cauffman, 2010). Indeed, most youth engage in some level of delinquency, substance use, or other form of rule-breaking behaviour (e.g., Brezina & Piquero, 2007). However, there is a small minority of adolescents (5-15%), known as “abstainers,” who do not engage in any adolescent delinquent and rule-breaking behaviours (e.g., Brezina & Piquero, 2007; Chen & Adams, 2010; Johnson & Menard, 2012). There are two competing explanations for adolescent delinquency abstention. Whereas in the development taxonomy model, Moffitt (1993) suggested that abstainers may be a troubled (e.g., anxious, socially excluded) group of adolescents, in the social control theory, Hirschi (1969) indirectly suggested that abstainers may be adolescents with a host of protective factors (e.g., strong bonds to parents or school). However, empirical evidence regarding delinquency abstention is still scarce.

This study tested theoretically-derived processes leading to delinquency abstention when compared to adolescents who experiment with some delinquent behaviour, hereafter referred to as “experimenting” adolescents. By differentiating among groups of adolescents with regard to the level of delinquency they engage in (i.e., abstainers, experimenters, and more delinquent adolescents), we were able to move forward from comparisons between abstainers and non-abstainers, which may have produced potentially misleading results. For example, these comparisons may suggest that abstainers are unique when there may be overlap in certain traits with experimenting adolescents but not more delinquent adolescents (Brezina & Piquero, 2007). We also examined whether theoretically proposed mediation and moderation processes leading to abstention from delinquency are different from those that predict significant involvement in delinquency, when compared to experimenting with delinquency and rule-breaking. These distinctions can provide important insight for intervention or prevention of different levels of delinquency in adolescence.

Theoretical Framework for Adolescent Abstention

To better understand adolescent abstention, our research was framed by two competing theories - the developmental taxonomy model and social control theory. First, according to the developmental taxonomy model (Moffitt, 1993; Moffitt et al., 2002) adolescent delinquency is comprised of two distinct groups: A minority of adolescents who are life-course-persistent offenders, and a larger group of adolescence-limited offenders. Two different developmental processes can explain these two groups of adolescents.

The life-course-persistent offenders show forms of antisocial behaviour from childhood throughout adulthood, which is thought to be caused by an interaction between persistent neurological problems and cumulative disadvantage in their environments. In contrast, the adolescence-limited offenders only participate in delinquency during adolescence, which is thought to be motivated by a desire for autonomy and independence that stems from the mismatch between their biological and social maturation (i.e., the maturity gap). Adolescence-limited offenders attempt to ease this gap by mimicking their (more delinquent) peers who appear to be more mature.

Because adolescent minor delinquency is considered to be an adaptive response to the maturity gap, the developmental taxonomy model suggests that abstainers may be poorly adjusted. For instance, abstainers may be excluded from these (delinquent) peers. Further, this exclusion from their peers may be related to structural barriers, such as parental control or rules, that not only prevent them from learning about delinquency but may also result in inadequate opportunities for peer interaction in general. Abstainers may also have characteristics that are considered “unattractive” by their peers, such as being unusually good students (Moffitt et al., 2002), or that leave them reluctant or unable to join these peer networks, such as anxiety or shyness (Moffitt, 1993). These hypotheses indicate that abstention may be the result of a unique set of personal and structural factors that limit adolescents’ ability to engage in the “teenaged social scene” (Moffitt, 1993, p. 689) and therefore, their exposure to delinquent role models.

Second, according to the social control theory (Hirschi, 1969), people are inherently likely to perceive delinquency as rewarding. However, adolescents with something to lose, for example, strong bonds with parents or school, will evaluate delinquency and relationships with delinquent peers as costly because they may damage these social bonds. By comparison, adolescents with already weak or limited social bonds may perceive delinquency to be less costly. Therefore, contrary to the developmental taxonomy model, and given the assumption of one underlying pathway to delinquency, abstainers should possess more protective factors compared to adolescents who engage in any level of delinquency.

Together, these two theories provide a useful framework for the examination of adolescent abstention. For instance, according to both the developmental taxonomy model and social control theory, engaging in some level of delinquency and rule-breaking during adolescence is normative. However, these two theories also create an interesting juxtaposition: In the developmental taxonomy model, adolescents who do not engage in normative delinquency may have unique and even potentially “maladaptive” characteristics that prevent their involvement in minor delinquency via limited access to their (delinquent) peers. Whereas in the social control theory, abstaining from delinquency is likely to be a reflection of a host of protective factors leading adolescents

to avoid both delinquency and delinquent peers. In this paper, we build on these theoretical hypotheses, by testing them together while explicitly making the distinction between abstainers, experimenting adolescents, and other more delinquent adolescents. In doing so, we examine whether the mechanisms or characteristics that distinguish abstainers from experimenters are different than those that distinguish experimenters from delinquents (i.e., unique mechanisms, developmental taxonomy) or if there is one underlying process in which the greater the risk, the greater the likelihood of delinquency (i.e., dose-response relationship, social control theory).

Previous Research on Adolescent Abstention

Previous research on abstainers has supported certain aspects of both theories' hypotheses, leading to contradicting ideas about adolescent abstention. For instance, consistent with both theoretical frameworks, abstainers had fewer delinquent peers according to both adolescent-report (Brezina & Piquero, 2007; Owens & Slocum, 2015) and peer-report measures (Chen & Adams, 2010). However, when comparing abstainers and non-abstainers, abstainers were better off in the peer context than would have been expected based on the developmental taxonomy. Recent research finds that adolescent abstainers were not entirely socially excluded - they reported having friends (Chen & Adams, 2010). However, they had fewer friends (Chen & Adams, 2010), were rated as less popular by their peers (Mercer et al., 2016), and spent less time with these friends (Barnes, Beaver & Piquero, 2011; Johnson & Menard, 2012). Further, peer acceptance of abstainers has been shown to increase after early adolescence (Rulison, Kreager & Osgood, 2014).

Additionally, when it comes to parents, there is support for the developmental taxonomy model idea that parents may be a structural barrier to learning about delinquency. For instance, compared to non-abstainers, abstainers scored higher on a construct that measured whether their parents knew their friends, knew their whereabouts, or set limits on time spent with friends or curfews (Piquero, Brezina & Turner, 2005).

Finally, regarding personal characteristics that may lead some adolescents to be either deemed as unattractive, unable, or unwilling to join their peers, some previous research has concluded that abstainers may be the compliant, good students who are seen as unpopular by other (more delinquent) adolescents (Piquero et al., 2005). Adolescent abstainers also scored higher in childhood on shyness, fearfulness, withdrawal, and compliance compared to non-abstainers (Owens & Slocum, 2015). However, abstainers also reported characteristics such as rationality, being less confrontational, and having better stress-related coping skills (Chen & Adams, 2010). On the one hand, according to the developmental taxonomy model, these characteristics

may be related to a reluctance to socialize with (delinquent) peers, or may be seen as unattractive by other peers. On the other hand, they are inconsistent with the idea of abstainers having characteristics that are maladaptive. Therefore, it is necessary to consider both positive and negative intrapersonal factors in abstention.

Moreover, consistent with the social control theory, research has found that abstainers reported stronger bonds than non-abstainers. These findings are constant across different operationalizations of familial bonds: for example, involvement with family, parental attachment or parental support, as well as bonds with school (Brezina & Piquero, 2007; Chen & Adams, 2010; Owens & Slocum, 2015). Overall, previous research found that compared to non-abstainers, abstainers spent less time with their peers, who were also less delinquent, possessed stronger bonds to parents, school, and teachers, but also perceived more parental control, and were more controlled themselves: either in terms of anxious, constrained behaviour or alternatively, in terms of rational, planned, organized behaviour.

However, there were only a few studies that compare abstainers to different types of delinquent adolescents. In one of these studies, abstainers were found to lack social potency, a measure that represents decisiveness, persuasiveness, leadership abilities, and enjoying being the center attention, but abstainers reported more planfulness compared to adolescents who engaged in some delinquency (Krueger et al., 1994). Additionally, Brezina and Piquero (2007) compared abstainers to a subgroup of non-abstainers who only engaged in underage drinking and found that abstainers scored higher on a measure of how wrong youth believed it would be to engage in certain delinquent types of delinquency (i.e., moral beliefs about delinquency) and on a measure of parental attachment. Abstainers also reported less time spent with peers, and less peer delinquency compared to this subgroup. In contrast, results from the same study showed that when abstainers were compared to all non-abstaining adolescents, abstainers also reported more social bonds such as higher teacher attachment, more school commitment, and more family involvement. These additional differences are consistent with the social control theory, but were not present when compared only to underage drinkers. These results show the importance of examining abstainers compared to experimenters, in order not to underestimate the potential overlap in traits between abstainers and other adolescents.

Additionally, the hypothesized theoretically-derived processes have yet to be systematically and simultaneously tested when comparing abstainers to adolescents who experiment with delinquency. Most specifically, in these studies, time spent with peers and peer delinquency were either considered predictors of abstention, or mean differences were examined. None of these previous studies have examined the mechanisms leading to abstention versus experimenting, while considering that time spent with peers could mediate the relation between structural barriers, personal characteristics, social bonds,

and abstention. At the same time, it is also necessary to consider whether the level of peer delinquency moderates the relation between time spent with peers and abstention. These additions to the literature are necessary to better understand adolescent delinquency abstention.

The Present Study

The primary aim of this study was to examine how abstainers compare to experimenting adolescents regarding hypotheses from these two contrasting theories on the processes proposed to underlie abstention. Figure 1 presents a model of these processes; including gender and parental occupation level (SES) as control variables, as both are known to be predictors of delinquency (Odgers et al., 2008).

Based on combined hypotheses from the developmental taxonomy model and social control theory, we examined if:

(1) the relations between the more distal factors (i.e., structural barriers, personal characteristics, and social bonds) and adolescent abstention (versus experimenting) would be mediated by the amount of time spent with peers.

(2) the relation between time spent with peers and adolescent abstention (versus experimenting) would be moderated by the level of peer delinquency.

Looking at these two theories together moves us forward as it allows us to compare and contrast the mechanisms expected by group-based approaches to delinquency versus theories that expect one underlying pathway to delinquency. Therefore, we also examined if these mediation and moderation hypotheses were unique to adolescent abstention, by conducting two models: First, we compared abstainers to experimenters. Second, we conducted an identical model comparing experimenters to delinquent adolescents.

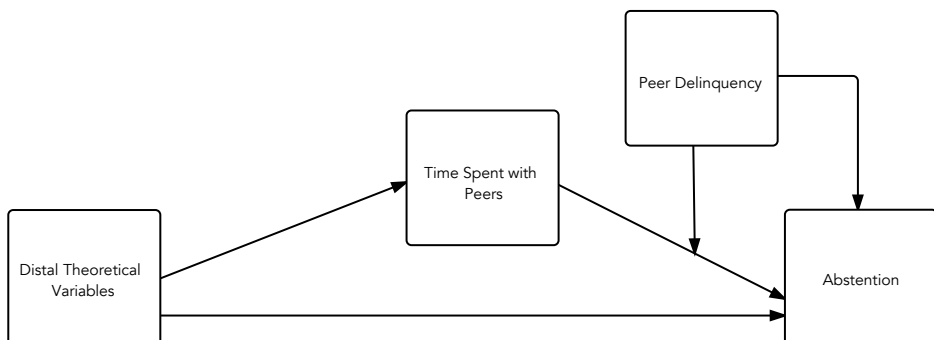


Figure 1. Model depicting mediation and moderation hypotheses.

Method

Participants

This study used data from the RADAR project (Research on Adolescent Development and Relationships) a prospective multi-method, multi-informant, longitudinal cohort study designed to identify and examine both familial and peer influences on adolescent development. The RADAR-Young sample consists of 497 Dutch adolescents (283 boys; 57%), their families and best friend. Participants were recruited from 230 schools that were randomly selected from a list of regular primary education schools in the western and central region of the Netherlands. Data collection began in 2006 when the target adolescents were in their first year of secondary school ($M_{\text{age}} = 13.03$, $SD = 0.05$). In the current paper, we made use of six annual waves of data covering ages 13 to 18.

Family composition and ethnic background were rather homogenous with 85% of adolescents living with both biological parents and 97% reporting their ethnicity to be Dutch-Caucasian. Although families were selected from the general Dutch population, because good written knowledge of the Dutch language, and the presence of both parents was preferred, these families differ from the general population on some characteristics. For example, approximately, 89% of families reported that at least one parent had a medium to high-level occupation compared to 66% of the general Dutch population (Statistics Netherlands, 2006). Further, because one of the larger aims of the study is to examine abnormal adolescent development, adolescents scoring at or above the clinical range cut-off based on teacher ratings of problem behaviour (Achenbach, 1991) during their last year at elementary school were oversampled. The present sample is largely similar to other Dutch non-clinical samples on measures of school commitment (Klimstra, Crocetti, Hale, Kolman, Fortanier & Meeus, 2011); social anxiety (Crocetti, Hale, Fermani, Raaijmakers, & Meeus, 2009); conscientiousness (Klimstra, Crocetti, Hale, Fermani & Meeus, 2011); and maternal support (Keijsers, Frijns, Branje & Meeus, 2009).

To examine our missing data, we tested if Little's (1988) Missing Completely at Random (MCAR) test was significant. Based on the acceptable $X^2 / df = 1.17$ ratio (Bollen, 1989), we included people with partially missing data in our analyses using Full Information Maximum Likelihood (FIML) in *Mplus*, when applicable.

Procedure

Written information was sent to families' homes and adolescents were also invited to contact their best friends for participation. Once identified, best friends were also

sent written information. Parents of both families provided informed consent before study participation. Trained researchers conducted annual assessments in the target adolescent family homes with the best friend present, and ensured that the battery of paper questionnaires was filled out individually. Families and best friends received the equivalent of approximately \$150 USD at each wave. The Utrecht University Medical Ethical Board approved this study.

Measures

Minor and Serious Delinquency

Delinquency was measured annually at 6 time points from age 13-18 using the Self-Report Delinquency Scale (Junger-Tas et al., 2004). Adolescents indicated whether they engaged in any of 30 different items, including minor items such as shoplifting, theft from home or school, destroying or defacing property, as well as more serious items such as burglary, theft from out of a vehicle, threatening violence with a weapon, or selling hard drugs, in the past year. We recoded items dichotomously (0 = *no* and 1 = *yes*) and summed them to create a variety scale (0 = *min.* and 30 = *max.*). Variety scales show better internal consistency, higher stability over time, larger group differences and stronger associations with conceptually related variables compared to frequency scales (Bendixen, Endresen & Olweus, 2003). The Cronbach's alphas for the total 30-item delinquency scale ranged between .76 and .93 across six waves.

Smoking and Marijuana Use

We measured smoking and marijuana annually using two items at six time points from age 13 to age 18. Adolescents indicated how often they smoked cigarettes (0 = *never tried* and 8 = *daily*) and how often they used marijuana (0 = *never* and 13 = *40 times or more*), in the past year. These two items were dichotomized (0 = *never used*, 1 = *used*) and summed to create a total variety scale (0 = *min.* and 2 = *max.*). The correlations between the two items ranged between .21 and .45, $p < .001$ at each wave. We labeled the combined item as smoking. The across wave correlations were acceptable, ranging from .62 to .80, $p < .001$

The Developmental Taxonomy

For all distal theoretical variables, we created a mean score using all six waves, when available. Maternal control was measured using the mean of the 5-item parental control measure (Stattin & Kerr, 2000). We included maternal control as a measure of a structural barrier that limits adolescents' possibilities to learn about delinquency. Example items are "Do you need your mother's permission to come home late on a week night?" and

“Does your mother demand to know how you spend your money?” (1 = *never* and 5 = *always*). The maternal control measurement was only available from age 14 onwards. The Cronbach’s alphas for this scale at all five waves ranged between .82 and .91.

School affinity and functioning was included as a measure of both social and outcome oriented functioning at school, which may be an “unattractive” personal quality in adolescence. This construct was measured using the mean of five items examining adolescents’ school functioning relative to their peers, in the past week. For example “Compared to your peers, how much do you enjoy school?” (1 = *much worse* and 10 = *much better*). The Cronbach’s alphas for this scale ranged between .74 and .80 at all six waves.

Social anxiety was measured with the Screen for Child Related Emotional Disorders (SCARED; Birmaher et al., 1997). This scale includes four items such as “I feel nervous when I am going to parties, dances, or any place where there will be people that I don’t know well” (1 = *almost never* and 3 = *often*). The Cronbach’s alphas for this scale ranged between .78 and .86 across waves. The SCARED is a screening instrument for anxiety disorder symptom dimensions and scores do not reflect a clinical diagnosis (Hale, Raaijmakers, van Hoof & Meeus, 2014).

Conscientiousness was measured using a shortened Dutch version of Goldberg’s Big Five Personality Questionnaire (Gerris et al., 1998). Conscientiousness is defined as “the tendency to be organized, responsible, and hardworking” and is included as a conceptualization of positive characteristics previously found to be related to abstention, such as being compliant, well-planned, and rational (Krueger et al., 1994; Chen & Adams, 2010). We used the mean of six items such as “I am accurate” (1 = *completely untrue* to 7 = *completely true*). The Cronbach’s alphas for this scale ranged between .82 and .89 across waves.

Social Control Theory

Maternal support, which we included as a measure of the quality of the parent-child bond, was measured using the mean of the 8-item support subscale of the Network of Relationships Inventory (Furman & Buhrmester, 1985). The scale includes items such as “To what extent does your mother help you figure out or fix things?” (1 = *little to not at all* and 5 = *as much as possible*). The Cronbach’s alphas for this scale ranged between .78 and .85 across waves.

School commitment was included as an indicator of the strength of bonds to school and was measured with the mean score of the 5-item subscale from the Utrecht -Management of Identity Commitments Scale (U-MICS; Crocetti et al., 2008). Examples of commitment items are: “My education gives me security in life” (1 = *completely disagree* to 5 = *completely agree*). For this scale, we only have measurements from age 14 onwards. The Cronbach’s alphas for this scale ranged between .93 and .96 across waves.

Time Spent with Peers

Time spent with peers was measured using the intensity of peer contact scale (Weerman & Smeek, 2005) at six waves with five items asking how often and for how long adolescents spend time with their peers outside of school and on the weekends. Adolescents indicated their answers on 3 or 4-point Likert scales, which were adjusted per item. For example, “How often do you spend time with your friends after school on week days?” (1 = *almost never* to 3 = *3 days or more*). The items on this scale were summed (5 = *min.* and 16 = *max.*). The Cronbach’s alphas for this scale ranged between .67 and .72 across waves. For analysis, a mean score across all waves was created.

Best Friend Delinquency and Smoking

We measured the adolescents’ best friends’ report of their involvement in delinquency and smoking, using the identical measures that adolescents reported on. Therefore, best friend delinquency was measured annually at six waves from age 13-18 using the 30-item Self-Report Delinquency Scale (Junger-Tas et al., 2004). The Cronbach’s alphas for the total 30-item best friend delinquency scale ranged between .82 and .89. Best friends also reported on smoking and marijuana use using the same two items measured annually at six waves from age 13 – 18. The correlations between the two items ranged between .30 and .49, $p < .001$ at each wave. The across wave correlations were acceptable, ranging from .52 to .76, $p < .001$.

Analytic Strategy

We conducted all analyses in *Mplus* version 7.3 using Maximum Likelihood Robust (MLR), except for the one-way ANOVAs that were conducted in SPSS version 22.

Constructing Groups

Our first goal was to construct groups of adolescent abstainers and other delinquent adolescents in order to compare abstainers to these other groups. Further, because we were also testing moderation by level of best friend delinquency, we used best friend reported delinquency to construct separate groups of best friends as well. We conducted Poisson Latent Class Growth Analysis (LCGA; Nagin & Land, 1993) across six waves of delinquency and smoking data to construct typologies of delinquent adolescents and their best friends. In LCGA, people in the same group are considered homogenous in terms of their developmental trajectory. The following LCGA steps were completed twice, once for the target adolescents and once for the best friends. We constrained a class in the LCGA to have an intercept and slope of zero because we conceptualized abstainers

as individuals who scored zero on all delinquency and smoking items, and who had a minimum of 4 out of the 6 waves of complete data. Five adolescents and 14 best friends were removed from the LCGA because they scored zero on all delinquency and smoking items, but they did not have a minimum of 4 out of 6 waves of data required for our definition of abstinence.

Model selection for the ideal number of LCGA classes was determined by a number of criteria. First, the Vuong-Lo-Mendell-Rubin Test (VLMR) assessed whether adding an additional class significantly improved the model fit. Second, the Bayesian Information Criterion (BIC) values should be lower than the BIC value for $k-1$ classes. Third, entropy scores were used to assess classification accuracy where scores closer to 1 indicate more accurate classification. Fourth, no class should be smaller than 5% of the sample. Fifth, we evaluated the parsimony of the class solutions, by considering whether an additional class was an extension of a class in the $k-1$ solution. Finally, we also considered the theoretical expectations for the number of different groups. To test the validity of the adolescent groups constructed in the LCGA we tested differences on theoretical variables with one-way ANOVAs.

Mediation and Moderation

The second goal of this study was to examine if (1) the relation between distal theoretical factors (i.e., structural barriers, personal characteristics, and social bonds) and group membership was mediated by time spent with peers and (2) if the relation between time spent with peers and group membership was moderated by best friends' delinquency. To address these aims, we conducted regression analyses. We conducted each analysis twice: First, we conducted models comparing abstainers to experimenters. Second, we tested an identical model comparing experimenters to delinquent adolescents, in order to determine if the theoretically-derived processes were unique for the distinction between abstaining and experimenting adolescents. All steps in these analyses controlled for gender and parents' occupation level (SES).

Testing the Mediating Role of Time Spent with Peers

In order to examine whether the relation between distal theoretical factors and group membership was mediated by the amount of time adolescents spent with their peers, we simultaneously tested if distal variables were related to group membership, if distal variables were related to time spent with peers, and if time spent with peers mediated the links between distal variables and group membership. One mediation model was conducted with all of the distal variables entered at once. Indirect paths were calculated as a product of $a*b$. *Mplus* makes use of the Delta method calculation of indirect effects.

Testing the Moderating Role of Best Friend Delinquency

We also conducted a moderation analysis to test if the relation between time spent with peers and group differs based on the level of best friend delinquency. First, we added dummy variables representing best friends' delinquency. Second, we included the two dummy variables representing best friends' delinquency and added two interaction terms between time spent with peers and the two dummy variables for best friends' delinquency.

Comparing Models

Comparisons of path coefficients between the abstainers versus experimenters model and the experimenters versus delinquent model were conducted using z-tests (Paternoster, Brame, Mazerolle & Piquero, 1998).

Results

Constructing Groups

Table 1 presents the model fit statistics for the LCGA for adolescents and their best friends. Considering the previously listed model selection criteria, we retained a 3-class solution for both adolescents and their best friends. Due to the high entropy in the 3-class model, no additional steps to reduce classification bias were necessary. The 3-class solution was consistent with previous findings, because either 3 and 4 class solutions have been most frequently reported across different studies (Jennings & Reingle, 2012), as well as consistent with our theoretical expectations (Moffitt et al., 1993).

Table 1. Summary of Poisson-LCGA Models for Delinquency, and Smoking Ages 13-18 for Adolescents and Their Best friends.

Class	BIC	VLMR p	Entropy	Class %
Adolescents				
1	16689.8	x	x	100
2	15813.1	x	.99	90, 10
3	13287.3	.00	.96	66, 24, 10
4	12878.2	.16	.91	55, 28, 10, 7
Best Friends				
1	17500.8	x	x	100
2	16814.0	x	.98	93, 7
3	14589.7	.00	.93	63, 31, 6
4	14133.9	.21	.90	56, 25, 13, 6

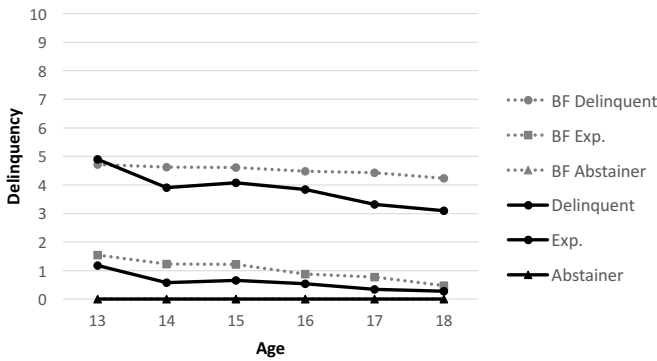


Figure 2a. Estimates of adolescents’ and best friends’ delinquency across adolescence. Due to high similarity, best friend abstainers are not distinguishable from abstainers.

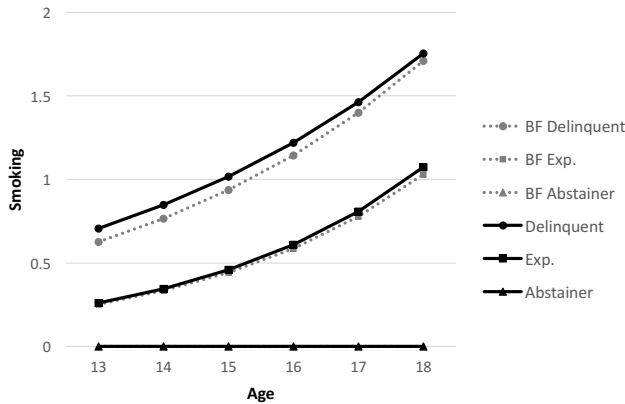


Figure 2b. Estimates of adolescents’ and best friends’ cigarette and marijuana use across adolescence. Due to high similarity, best friend abstainers are not distinguishable from abstainers.

In the adolescent 3-class solution, the first group ($n = 51$, 10%) was comprised of a group of adolescents who met the criteria for “abstainers” - characterized by scores of zero on all measures, across all waves. The second group was comprised of the majority of adolescents ($n = 324$; 66%), characterized by low initial levels of delinquency that decreased over time and low levels of smoking which linearly increased over time. Therefore, we labeled this class as “experimenters.” The third group of adolescents ($n = 117$; 24%) was characterized by a higher level of delinquency relative to other adolescents in early adolescence, which slowly declined. This group also showed an increase in smoking across adolescence. We labeled this group “delinquent.” The distribution and pattern of development among the 3-class solution of best friends was highly similar to that of the adolescents (Figure 2a and 2b). Best friends also consisted of a group of abstainers ($n = 30$; 6%), experimenters ($n = 292$; 63%), and a delinquent group ($n = 143$, 31%).

In order to test the validity of the three adolescent groups constructed in the LCGA, we conducted one-way ANOVAs to examine mean differences between these groups on our hypothesized distal theoretical variables. Table 2 presents these means and standard deviations, ANOVA results, as well as gender and SES, and cross tabulations with the best friend delinquency groups. Similar to previous research, the number of boys and the prevalence of low SES adolescents increased with the delinquency of each class (see: Odgers et al., 2008). Figures 2a and 2b present the estimated means for each group for delinquency and smoking based on the exponentiated log-rate values from the LCGA intercept and slope estimates.

Table 2. Descriptives and Validation of the Adolescent Groups

	Abstainer		Experimenter		Delinquent		F-test
	M	SD	M	SD	M	SD	
Developmental Taxonomy							
Mother Control	3.26 ^a	0.85	3.23 ^a	0.80	2.97 ^b	0.80	$F(2, 443) = 4.04^*$
School Functioning	6.93 ^a	1.02	6.71 ^a	0.86	6.34 ^b	0.93	$F(2, 442) = 9.00^{***}$
Social Anxiety	5.87 ^a	1.62	5.91 ^a	1.62	5.96 ^a	1.52	$F(2, 443) = 0.06$
Conscientiousness	4.62 ^a	0.91	4.04 ^b	0.97	3.62 ^c	0.85	$F(2, 442) = 19.59^{***}$
Social Control Theory							
Mother Support	3.89 ^a	0.42	3.73 ^b	0.45	3.55 ^c	0.53	$F(2, 443) = 10.31^{***}$
School Commitment	3.85 ^a	0.53	3.68 ^a	0.62	3.35 ^b	0.69	$F(2, 444) = 14.09^{***}$
Mediator							
Time Spent with Peers	9.62 ^c	1.47	10.58 ^b	1.32	11.47 ^a	1.18	$F(2, 441) = 35.89^{***}$
Outcome							
Delinquency	0.00 ^c	0.00	0.64 ^b	0.53	3.97 ^a	2.31	$F(2, 489) = 364.37^{***}$
Smoking	0.00 ^a	0.00	0.58 ^b	0.46	1.14 ^c	0.51	$F(2, 489) = 123.61^{***}$
	%		%		%		χ^2
Control Variables							
Female	53 ^a		46 ^a		30 ^b		
Male	47 ^b		54 ^b		70 ^a		$\chi^2(2, 492) = 11.42^{**}$
Low SES	10 ^{a,b}		8 ^b		19 ^a		
Medium/High SES	90 ^{a,b}		92 ^a		81 ^b		$\chi^2(2, 484) = 10.47^{**}$
Moderator							
Best Friend Abs.	27 ^a		5 ^b		1 ^b		
Best Friend Exp.	71 ^a		69 ^a		42 ^b		
Best Friend Del.	2 ^c		26 ^b		57 ^a		$\chi^2(4, 460) = 85.14^{***}$

Note. Different superscripts indicate significant post hoc differences at $p < .05$. * $p < .05$, ** $p \leq .01$, *** $p \leq .001$. Sample ranges: Control (1.20 – 5.00); School Functioning (3.73 – 9.70); Social Anxiety (4.00 – 11.67); Conscientiousness (1.69 – 6.50); Support (2.25 – 4.81); School Commitment (1.28 – 5.00); Time Spent with Peers (5.50 – 14.83), Smoking (0.00-2.00); Delinquency (0.00-15.00)

Mediation and Moderation

Abstainers versus Experimenters

Consistent with the main aim of our study, we first tested our hypotheses in a model comparing abstainers versus experimenters.

Testing the Mediating Role of Time Spent with Peers

Figure 3 presents the results of the mediation model for abstainers versus experimenters. Conscientiousness and social anxiety had a significant negative relation with time spent with peers whereas mother support had a positive significant relation with time spent with peers. Time spent with peers was also related to a greater likelihood of being an experimenter compared to an abstainer. Both SES and gender were unrelated to group membership.

In terms of the mediation processes tested: Higher conscientiousness was significantly related to a lower likelihood of becoming an experimenter, both directly, and indirectly as higher levels of conscientiousness were also related to less time spent with peers. Furthermore, social anxiety was negatively and indirectly related to experimenting with delinquency. Higher social anxiety is related to a lower likelihood of being in the experimenting group via spending less time with peers. Although mother support was significantly related to time spent with peers, the indirect relation with group membership was non-significant.

Testing the Moderating Role of Best Friend Delinquency

In order to test if the level of best friend delinquency moderated the relation between time spent with peers and abstaining versus experimenting, we added four additional variables to the mediation model. First, we added two dummy variables to the model to test the main effect of best friend delinquency on adolescent group membership. These dummy variables represented being in the abstainer or delinquent group, therefore experimenters served as the reference group. Having a best friend who is an abstainer decreased the odds of being an experimenter ($b = -1.04$, $SE = 0.53$, $p = .049$, $OR = 0.35$) and having a best friend who is delinquent increased the odds of being an experimenter ($b = 2.67$, $SE = 1.00$, $p = .008$, $OR = 14.56$).

Second, after testing the main effects of best friend delinquency, we added two interaction terms to the model, one between abstainer best friend and time spent with peers and another between delinquent best friend and time spent with peers. Therefore, best friend experimenters are also the reference group in each interaction. In this model, the relation between time spent with peers and group membership was not significantly moderated by having an abstaining (versus experimenter) best friend ($b = -0.47$, $SE = 0.28$,

$p = .088$) but was significantly moderated by having a delinquent (versus experimenter) best friend ($b = 1.76, SE = 0.29, p < .001; OR = 0.17$). In the significant moderation by delinquent best friend (Figure 4), when adolescents had a delinquent best friend, the amount of time spent with peers did not affect the likelihood of being an abstainer versus an experimenter (i.e., ceiling effect of delinquent best friend). However, when the best friend was an experimenter more time with spent with peers increased the likelihood of being an experimenter versus an abstainer.

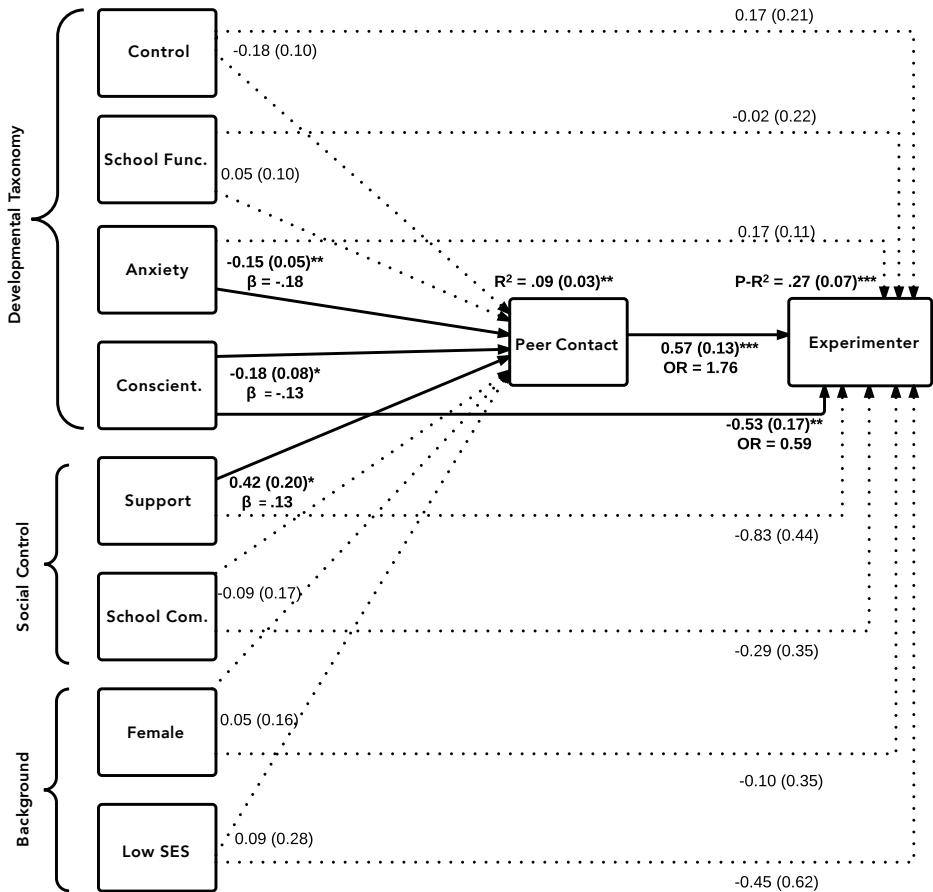


Figure 3. Abstainers versus Experimenters: Unstandardized direct effects and standard errors for the mediation model. Significant direct effects are indicated in bold and include standardized coefficients. * $p < .05$, ** $p < .01$, *** $p \leq .001$. Indirect Effects: Conscientiousness ($b = -0.10, SE = 0.05, p = .04$); Social Anxiety ($b = -0.09, SE = 0.04, p = .014$); Support ($b = 0.24, SE = 0.13, p = .069$).

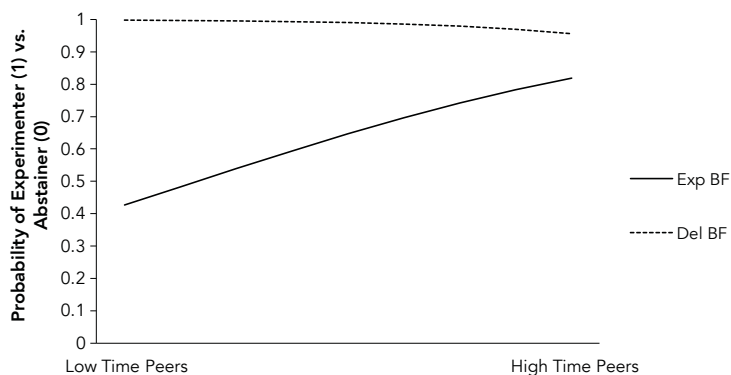


Figure 4. The effect of time spent with peers on the likelihood of becoming an abstainer versus an experimenter, moderated by delinquent (versus experimenter) best friend

Experimenters versus Delinquents

We also examined an identical theoretical model comparing experimenters to the delinquents, in order to determine how unique the processes leading to abstention versus experimentation were.

Testing the Mediating Role of Time Spent with Peers

Two developmental taxonomy factors, namely social anxiety and perceived maternal control, were related to less time spent with peers (Figure 5). Time spent with peers was positively associated with belonging to the delinquent versus experimenter group. Contrary to the abstainer-experimenter model, none of the direct paths for the distal theoretical predictors were significant. However, having a low SES increased the likelihood of belonging to the delinquent group, whereas being female decreased this likelihood.

Regarding the mediation process, consistent with the abstainer-experimenter model, social anxiety had a negative indirect effect on the likelihood of belonging to the delinquent group. Unlike in the previous model, control also had a negative indirect effect on group membership.

Testing the Moderating Role of Best Friend Delinquency

Using the identical steps to test for moderation as outlined above, we found that in the experimenter versus delinquent model, having a best friend who is an abstainer was not significantly related to group membership ($b = -0.54$, $SE = 1.05$, $p = .607$) but having a best friend who is delinquent increased the odds of being in the delinquent group ($b = 0.86$, $SE = 0.29$, $p = .003$, $OR = 2.35$). The relation between time spent with peers and group membership was not significantly moderated by having an abstainer best friend ($b = -0.37$, $SE = 0.29$, $p = .212$), or by having a delinquent best friend ($b = -0.19$, $SE =$

0.23, $p = .425$). The effect of time spent with peers on the odds of being in the delinquent group compared to the experimenting group does not differ with the level of best friend delinquency.

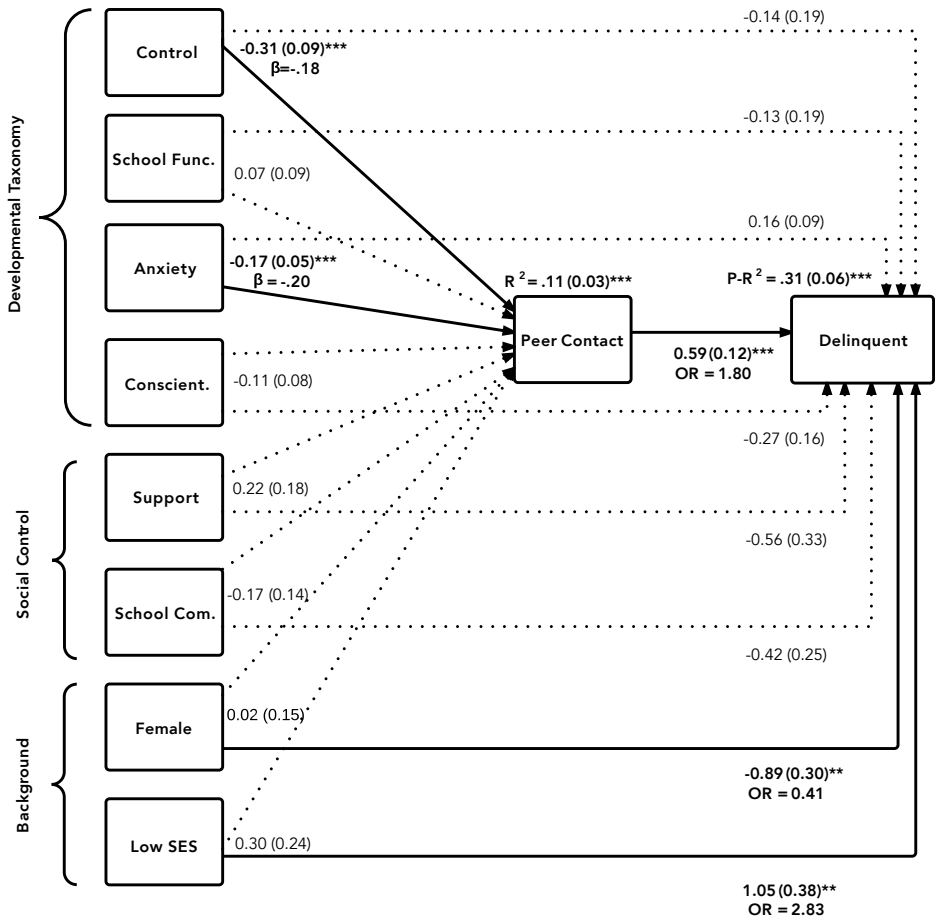


Figure 5. Experimenters versus delinquents: Unstandardized direct effects and standard errors for the mediation model. Significant direct effects are indicated in bold and include standardized coefficients. * $p < .05$, ** $p < .01$, *** $p \leq .001$. Indirect Effects: Control ($b = -0.18$, $SE = 0.06$, $p = .002$); Social Anxiety ($b = -0.10$, $SE = 0.03$, $p = .002$).

Z-tests of Model Coefficients

Z-test comparisons of path coefficients between the abstainer-experimenter and experimenter-delinquent models established that 2 out of 10 pathway coefficients significantly differed between models. Namely, SES was not related to the likelihood

of abstention versus experimenting, whereas low SES was a significant predictor of belonging to the delinquent group compared to experimenting. The moderation of time spent with peers by delinquent best friends was significant in the abstainer-experimenter model but not the experimenter-delinquent model.

Discussion

A small group of adolescents manage to avoid delinquency and rule-breaking altogether. On the one hand, according to the developmental taxonomy model (Moffitt, 1993) abstainers may have structural barriers or personal characteristics that exclude them from the (delinquent) peer context when compared to adolescents who engage in minor delinquency. On the other hand, according to the social control theory (Hirschi, 1969) abstainers are likely to be well-adjusted adolescents who have protective factors such as strong bonds that aid them in managing to avoid both delinquency and delinquent peers. Combining these theoretical frameworks into one model, we examined whether the relations between structural barriers, personal characteristics, social bonds and abstention were mediated by time spent with peers and if in turn, the relation between time spent with peers and abstention was moderated by the level of best friend delinquency.

In doing so, we found that abstainers possess characteristics (conscientiousness, social anxiety) that were related to spending less time with their peers. Furthermore, although there is much overlap in the processes that distinguish between abstaining, experimenting, and delinquent adolescents, the relation between time spent with peers and best friend delinquency may differ between different groups of adolescents leading to abstention or (more) delinquency. In other words, the amount of time spent with peers may be more or less strongly related to experimenting with delinquency depending on the level of best friend delinquency.

Mediation and Moderation

In general, these results are in line with the developmental taxonomy model. For instance, social anxiety is indirectly related to increased likelihood of being an abstainer via less time spent with peers. Further, the positive personal characteristic of conscientiousness was also related to spending less time with peers and therefore, a greater likelihood of abstention. Therefore, in line with (Moffitt, 1997), we would suggest that personal characteristics (i.e., anxiety or conscientiousness) may indeed be the most important factors related to abstainers' decreased participation in the (delinquent) peer context.

Furthermore, we suggest that the presence of some non-clinical social anxiety symptoms may be a protective factor, when they lead to somewhat less time spent with peers but do not isolate adolescents, or otherwise impair (social) functioning (see also: Nelemans et al., 2016). This is also in line with research suggesting that comorbid anxiety amongst youth who exhibit other externalizing problems such as ADHD may also be protective as these youths had enhanced response to behavioural treatment outcomes compared to youth with ADHD without anxiety (MTA, 1999).

However, the direct effect of conscientiousness may indicate that although personal characteristics may be an important factor in abstention from delinquency, rational, planned, controlled behaviour as displayed in high levels of conscientiousness rather than high levels of anxiety could be related to a reluctance or disinterest in (delinquent) peers rather than an inability to engage in the peer context leading to exclusion. Similarly, previous research has also reported that abstainers have high levels of self-constraint in adolescence (Boutwell & Beaver, 2008) and conscientiousness in adulthood (Moffitt et al., 2002). Indeed, conscientiousness is thought to conceptually overlap with self-control (Duckworth, Tsukayama & Kirby, 2013) and there is a well-established link between lower self-control and increased delinquency (Pratt & Cullen, 2000). However, self-control is widely used as an umbrella for related constructs of varying convergent validity (Duckworth et al., 2013). For instance, conscientiousness is thought to be composed of four facets: control, industriousness, responsibility, and orderliness (Eisenberg, Duckworth, Spinrad & Valiente, 2012). Therefore, research should try to disentangle the facets that may be most predictive of abstention. Taken together, the possibility that abstainers have personal characteristics that do not exclude them from, but rather aid them in managing to avoid the (delinquent) peer context and delinquent behaviours should be considered further.

In general, our results do not support the social control theory in terms of the factors that predict abstention. For instance, contrary to previous studies comparing abstainers and non-abstainers, we did not find evidence for school commitment or support as protective factors (e.g., Brezina & Piquero, 2007). Instead, we found that perceived mother support was related to increased time spent with peers, although the indirect effect on abstaining or experimenting was not significant.

Our results also suggest that, as could be expected, abstainers and more delinquent adolescents are very unlikely to have close relationships with each other (in our data only one abstainer had a delinquent best friend, and one delinquent adolescent had an abstaining best friend). This finding implies there is a distance between these adolescent groups, consistent with the finding that peers are often similar in their delinquency during adolescence (Weerman, 2011). This is generally consistent with the hypothesis derived from the developmental taxonomy model that life-course-persistent peers influence

adolescence-limited adolescents, and that abstainers may not have as much exposure to these life-course-persistent peers. Though, this theory refers to a broad exposure to these more delinquent peers (e.g., classmates, older adolescents at school, the larger peer group), and does not imply that an adolescent would need to have a close relationship to mimic this more delinquent behaviour. Perhaps, the influence of peer delinquency is intensified by the closeness of the relationship, in which case a best friend who is delinquent may be a salient influence to the adolescent's own delinquency (e.g., Weerman, 2011). Previous research suggested that it was not the time spent with peers, but rather the type of peers that time was spent with that mattered for delinquency abstention (Brezina & Piquero, 2007). Our finding of a ceiling effect of having a delinquent best friend on predicting experimenting versus abstaining corroborates this finding. This may suggest that time spent with peers is most relevant for abstention when adolescents have best friends who are not delinquent. This could be due to the possibility that having a delinquent best friend is enough exposure to delinquency to increase participation, whereas adolescents who do not have a delinquent best friend may gain this exposure more gradually via increased time with a potentially extended network.

Comparing Models

In our direct model comparison, we did not find strong evidence that the process leading to abstention was entirely unique compared to the process leading to (more) delinquency as in this data only 2 out of 10 pathways were significantly different between models. Looking at both models, with the exception of conscientiousness predicting abstention, the general process for all adolescents appears to be that distal theoretical factors (although not identical) are mediated by time spent with peers. The finding of a general process across all adolescents is consistent with social control theory and other theories that expect one underlying pathway leading to delinquency (i.e., a dose-response relationship). However, the moderation effect of best friend delinquency differed between models: increased time spent with peers is related to experimenting when the best friend is an abstainer or an experimenter. There was no moderation of time spent with peers in the experimenter-delinquent model. Further, having a low SES was a strong predictor of being in the delinquent group, but did not distinguish between abstainers and experimenters.

Limitations and Suggestions for Future Research

The findings presented in this paper should be interpreted with the knowledge of the following limitations. First, although we aimed to simultaneously test two important theories and their hypotheses regarding abstention, we were not able to test all theoretically relevant hypotheses. For instance, we did not consider that abstainers might not experience the maturity gap (e.g., Dijkstra et al., 2015). It is important to consider that pubertal timing may impact either the type of best friends adolescents have or alternatively, the influence of these friends (Barnes et al., 2011; Piquero & Brezina, 2001). Second, latent class growth analyses hold the risk that sample-specific solutions are reported. Although we were able to replicate our adolescent solution among their best friends, this possibility should be considered. Third, although we did identify three classes, consistent with both previous research (e.g., Jennings & Reingle, 2012) and the expectations from the developmental taxonomy model, our two delinquent classes cannot be compared directly to adolescence-limited or life-course-persistent trajectories. This is because we do not have childhood or adult measures to confirm limited versus persistent behaviour, and because the delinquent class is both less delinquent and is comprised of a higher percentage of adolescents than would be expected in a life-course-persistent trajectory. Additionally, future research with the potential to include childhood measures as predictors of adolescent delinquency abstention would be beneficial, as in the current sample distal variables and delinquency are measured concurrently during adolescence. These analyses do not preclude the fact that delinquency may affect distal variables and therefore, conclusions regarding causality or developmental order cannot be drawn. Fourth, we did not have the power to run these analyses separately for each gender. Fifth, we conceptualized abstention as adolescents who did not engage in risky or delinquent behaviour, but did not include alcohol use in our study due to the high number of adolescents in the Netherlands who have used alcohol by the age of 16 (85%; van Dorsselaer et al., 2009), suggesting that alcohol use is prominent and there is little variation among adolescents by age 18. Naturally, this may be different across different samples.

Sixth, the time spent with peers measure we used indicated how often and for how long adolescents spent time with their peers - but did not provide detailed information on what they are doing in this time, or whether or not this time is supervised or structured (e.g., Siennick & Osgood, 2012). The inclusion of more detailed measures of how time is spent with peers would be informative in future research. This is particularly true as prevention may benefit from focusing on the potential influence of friends or the types of activities in which time with friends is spent (e.g., Wolfe, Crooks, Chiodo, Hughes & Ellis, 2011). However, and finally, the cell sizes in the moderation analyses were very small,

because – as could be expected – abstainers and delinquents do not seem to associate as best friends. Whereas the moderation results are theoretically plausible, this limitation should be noted in any interpretation or extension of these findings.

Conclusion

By comparing abstainers to experimenting adolescents our study is one of the first to find, consistent with the developmental taxonomy, that social anxiety is indirectly related to abstention. Further, abstainers do report spending less time with their peers and are very unlikely to have delinquent best friends. Notably, conscientiousness is also directly related to delinquency abstention. However, these results do not necessarily suggest that abstention is maladaptive. Rather, abstainers may have (positive) personal characteristics that do not exclude them, but rather help them avoid the (delinquent) peer context and delinquency altogether. Furthermore, although the processes leading to abstention are generally similar to those leading to delinquency, they are not identical. Indeed, more research is needed to examine the types of activities in which abstainers spend time with their peers, the quality of their peer or best friend relationships and individual differences in susceptibility to peer pressure from experimenting or delinquent (best) friends.

CHAPTER 5

Adolescent Social Anxiety, Adolescent Delinquency (Abstention), and Emerging Adulthood Relationship Quality*

Mercer, N., Crocetti, E., Meeus, W., & Branje, S. (2016). Examining the Relation Between Adolescent Social Anxiety, Adolescent Delinquency (Abstention), and Emerging Adulthood Relationship Quality. *Anxiety, Stress and Coping*. Advanced Online Publication. doi: 10.1080/10615806.2016.1271875

* N.M. conceptualized the study, analyzed the data, and wrote the manuscript. E.C., S.B., and W.M. provided feedback on the analyses and manuscript.

Abstract

Social anxiety symptoms and delinquency are two prevalent manifestations of problem behaviour during adolescence and both are related to negative interpersonal relationships in adolescence and emerging adulthood. This study examined the relation between social anxiety and delinquency in adolescence and the interplay between adolescent social anxiety and delinquency on perceived relationship quality in emerging adulthood. In a 10-year long prospective study (T1 n = 923; T2 n = 727; Mage T1 = 12; 49% female), we examined competing hypotheses using regression analyses: the *protective perspective*, which suggests social anxiety protects against delinquency; and the *co-occurring perspective*, which suggests social anxiety and delinquency co-occur leading to increased negative interpersonal outcomes. In adolescence, the relation between social anxiety and delinquency was consistent with the *protective perspective*. In emerging adulthood, consistent with the *co-occurring perspective*, ever-delinquents (but not delinquency abstainers) with higher social anxiety reported less perceived best friend, mother, and father support compared to delinquents with lower social anxiety. There was no interaction between anxiety and delinquency in predicting perceived conflict. This study highlights the importance of examining the relation between social anxiety and delinquency with regards to different interpersonal outcomes.

Introduction

Problem behaviours often become more frequent in adolescence and can be displayed in many different forms (Arnett, 1999). This paper focuses on social anxiety and delinquency for two reasons: First, because social anxiety symptoms are one of the most prevalent manifestations of psychopathology during adolescence (Merikangas et al., 2010) and, at the same time, most adolescents engage in at least one act of delinquency such as vandalism, shoplifting or substance use (Moffitt, Harrington, Caspi & Milne, 2002). Second, both social anxiety and delinquency are related to a wide range of negative developmental and relational outcomes, including poorer relationships with parents and peers (e.g., Hoeve et al., 2009; Hoeve et al., 2012; Kingery, Erdley, Marshall, Whitaker & Reuter, 2010). Given the prevalence of social anxiety and delinquency and their negative impact on interpersonal relationships, this paper aimed to disentangle their relation in adolescence as well as to examine the role of adolescent social anxiety and delinquency on the perceived quality of social relationships in emerging adulthood. In doing so, we can develop a further understanding of the enduring effects of adolescent anxiety and delinquency, both of which are a matter of concern for parents, educators, and professionals interested in improving the well-being of young people.

Social Anxiety and Delinquency

Generally, there are two perspectives on the relation between social anxiety and delinquency. First, social anxiety and delinquency are often thought to be negatively related, conceptualized as opposite ends of a single continuum (Galbraith, Heimberg, Wang, Schneier, & Blanco, 2014) and therefore protective against each other (*protective perspective*). Second, there is also evidence that social anxiety symptoms and delinquency may be positively related (Zoccolillo, 1992), and therefore co-occurring (*co-occurring perspective*).

In the *protective perspective*, the social inhibition characteristic of social anxiety may work as the protective mechanism against engaging in antisocial behaviours, such as delinquency (Lahey & Waldman, 2003; Pine, Cohen, Cohen & Brook, 2000). More specifically, social anxiety may result in less time spent with peers, or influence the types of activities adolescents engage in with their peers (e.g., going to the movies instead of going to unsupervised parties), leading to fewer opportunities for delinquency (e.g., Nelemans et al., 2016; Mercer, Keijsers, Crocetti, Branje & Meeus, 2016). To further illustrate, social anxiety symptoms are thought to be associated with behavioural inhibition, risk-aversion, overregulation, and shy or submissive behaviour (i.e., Gilbert, 2001). This

description runs parallel to research that found that adolescents who do not engage in any form of delinquency (i.e., delinquency abstainers) tend to be shy, withdrawn, passive or compliant (Owens & Slocum, 2015), more rational, and non-confrontational (Chen & Adams, 2010).

Delinquency abstainers have been found to have other characteristics that could also be attributed to having more social anxiety symptoms such as: having strong beliefs against antisocial behaviour (i.e., strict adherence to social norms; Piquero & Brezina, 2005), being more likely to have fewer friends, and spending less time with these friends (Chen & Adams, 2010). However, research suggests that delinquency abstainers are, for the most part, well-adjusted adolescents who have good relationships with their parents (Piquero & Brezina, 2005; Chen & Adams, 2010) and who become well-adjusted adults (e.g., Moffitt et al., 2002). Therefore, not only does this research suggest that social anxiety may protect against delinquency in adolescence, there may also be an upside to experiencing some social anxiety symptoms, as well.

In the *co-occurring perspective*, social anxiety may co-occur with antisocial behaviour or delinquency without any buffering or protective benefits, in clinical samples (e.g., Galbraith et al., 2014; Goodwin & Hamilton, 2003; Kashdan, McKnight, Richey & Hofmann, 2009; Marmorstein, 2007; Sareen, Stein, Cox, Hassard, 2004) but also in community samples (e.g., Tillfors, El-Khoury, Stein & Trost, 2009). Co-occurrence has been related to more impairment and distress than either social anxiety or antisocial behaviour alone (Galbraith et al., 2014; Goodwin & Hamilton, 2003). For instance, people with co-occurring social anxiety and antisocial behaviour problems were more likely to indicate that they had troubles with stability of employment or responsibilities at work, that they had recently separated or divorced, and that they had other interpersonal difficulties with neighbors, friends or co-workers (Galbraith et al., 2014). Therefore, in the *co-occurring perspective*, more social anxiety would not be protective from delinquency, but would instead be associated with increased delinquency. Together, these two different manifestations of problem behaviour may result in even poorer functioning.

Social Anxiety, Delinquency, and Relationship Quality

Because both social anxiety and delinquency in adolescence can hamper social interactions (Rapee & Spence, 2004; Steinberg & Monahan, 2007), including poorer relationships with both parents and peers (e.g., Hoeve et al., 2009; Giordano, Cernkovich & Pugh, 1986; Kingery et al., 2010; Muris, Meesters, van Melick, Zwambag, 2001), it is important to examine how the relation between these two inherently (anti-)social constructs can impact the perceived quality of these pertinent relationships later in emerging adulthood.

In doing so, it is also necessary to examine both positive and negative dimensions of relationships to best determine the overall quality (e.g., Berndt, 2002). Therefore, we consider both aspects of quality to further advance the discussion surrounding the different hypotheses regarding how and when social anxiety and minor delinquency may be related.

The Present Study

In line with the literature reviewed above, the first aim of this study was to examine the two competing hypotheses about the relation between social anxiety symptoms and delinquency in a prospective study of adolescents. Specifically, the *protective perspective* would expect that in adolescence, delinquency abstention would be related to higher levels of social anxiety, whereas, the *co-occurring perspective* would expect delinquency to be related higher levels of social anxiety.

Additionally, the second aim of this study was to examine the enduring individual and combined effects of adolescent social anxiety and delinquency on perceived best friend and parental relationship quality (conflict and support) in emerging adulthood. Based on the *protective perspective* we could expect that social anxiety and delinquency would interact to predict later perceived relationship quality, with the presence of one serving as a buffer for the other. For example, perhaps the positive effect of being non-delinquent (i.e., delinquency abstention) in adolescence decreases the negative relation between social anxiety and interpersonal relationship quality. Based on the *co-occurring perspective* we could also expect that social anxiety and delinquency would interact leading to poorer quality relationships for delinquent adolescents with higher social anxiety symptoms.

Finally, much of previous research has been conducted using diagnostic or clinical cut-offs for both social anxiety and antisocial behaviour or conduct problems. Therefore, there is little knowledge regarding the relation between social anxiety and delinquency in a general population sample. In this study, we examined social anxiety symptoms and whether adolescents have ever engaged in any delinquent acts. Studies that examine the relation between pre-clinical social anxiety and ever engaging in adolescent delinquency can provide insight on the interplay of these two domains *before* they reach problematic or diagnostic criteria.

Method

Participants

This study used data from the CONAMORE project (CONflict and Management Of Relationships). CONAMORE is a prospective longitudinal multi-cohort study. In this study, we used the early adolescent cohort, which consisted of 923 adolescents (49% females) followed for 6 waves into emerging adulthood. At the first wave, participants were approximately 12 years old ($M = 12.42$, $SD = 0.59$; Range = 10-15). The first 5 waves were conducted annually from ages 12 to 16 and the sixth wave was conducted five years later when adolescents were approximately 21 years old. At the first measurement wave most adolescents in the sample lived with both parents (85.1%) and reported their ethnicity to be Dutch (81.7%). The remaining adolescents reported themselves as belonging to various ethnic minorities (14.7%; e.g., Surinamese, Antillean, Moroccan, and Turkish) or did not report their ethnicity (3.6%). For comparison, when data collection began in 2001, 21% of all Dutch early-to-middle adolescents belonged to ethnic minority groups. Furthermore, approximately 69% of the young cohort reported to be in university or college-preparatory high school at Wave 5. Of the original 923 participants, 727 (54% females) participated in the sixth wave.

Missingness and Attrition

Sample attrition was 1.2% across adolescent waves. In the current study, the sample size at each wave in adolescence was 923, 923, 906, 902, and 886, respectively. Missing item values were estimated in SPSS using the relative mean substitution procedure (Raaijmakers, 1999). At each adolescent wave no more than 7.5% of the data included in the current study was missing, with an average of 3.4%. The sample size at Wave 6 (age 21) was 727 of the original 923 adolescents. This larger attrition at Wave 6 (21%) can be explained by the 5-year gap between the last two measurement waves. We performed attrition analyses to examine if the 727 adolescents who participated in Wave 6 at age 21 differed from the 196 who dropped out. Being male $X^2(1, 923) = 27.92$, $p < .001$ and lower educated $X^2(1, 870) = 45.92$, $p < .001$ were significant predictors of drop out at Wave 6. Concerning the study variables, reporting higher social anxiety $t(1, 407.23) = -4.73$, $p < .001$, more mother support $t(1, 283.40) = -4.00$, $p < .001$, more best friend support $t(1, 920) = -5.34$, $p < .001$, more father support $t(1, 902) = -5.40$, $p < .001$, and less best friend conflict $t(1, 289.17) = 5.29$, $p < .001$ were all significant predictors of participation at Wave 6. We made use of all available data with the exception of seven adolescents who

were excluded because they did not have enough data to be classified as abstainers or ever-delinquents.

Procedure

Participants were recruited from secondary schools in the province of Utrecht, The Netherlands. Written information about the study and possibilities to decline participation were provided and both adolescent and parental informed consent were required. Less than 1% of approached students declined to participate. No exclusion criteria were applied. Annual measurements began in 2001 and the first five measurements took place at adolescents' schools in the fall of each year. The sixth measurement took place in 2010 in participants' homes. Adolescents received 10 euro for their participation at each wave. The Utrecht University Board of the Institute for the Study of Education and Human Development (The Netherlands) approved this study.

Measures

Delinquency

Adolescent delinquency was measured using a 16-item self-report delinquency scale (Baerveldt, van Rossem & Vermande, 2003) measured in five annual waves from ages 12-16. Adolescents indicated whether they engaged in delinquent acts such as shoplifting, other theft, destroying or defacing property, being involved in a fight or using drugs in the past year. We coded adolescent delinquency as a dichotomous variable based on theory and previous research that have suggested that delinquency abstainers may be especially likely to experience anxiety compared to adolescents who engage in any delinquency (e.g., Moffitt, 1993; Owens & Slocum, 2015). More specifically, we classified all adolescents who scored zero on all measured items, and who had complete data for a minimum of 4 out of 5 waves of data measured in adolescence, to be adolescent delinquency abstainers (0 = *abstainer*; $n = 206$; 22% of total sample). Adolescents who indicated that they engaged in 1 or more items at any given wave were coded as ever-delinquent (1 = *ever-delinquent*; $n = 710$)^{1,2}. Overall, 72% of abstainers were female and 17% of abstainers reported attending

- 1 Seven adolescents indicated that they did not engage in any of the 16-items, but did not have a minimum of four waves of complete data. These adolescents were excluded to avoid misclassification.
- 2 2% of this sample (14 females and 5 males) were classified as ever-delinquents on the basis of drug use items only. While it has been suggested that adolescents whose only delinquent act is drug use may be self-medicating their social anxiety, these 19 adolescents had a lower score on social anxiety ($M = 1.39$; $SD = 0.36$) than the total sample ($M = 1.53$; $SD = 0.41$). Furthermore, results did not change when these adolescents were excluded from the analysis.

a vocational-preparatory high school. This is in comparison to the ever-delinquents, of which 42% were female and 30% reported attending a vocational-preparatory high school.

Social Anxiety

The Screen for Child Related Emotional Disorders (SCARED; Birmaher et al. 1997; Hale, Crocetti, Raaijmakers & Meeus, 2011) measured social anxiety. We created a mean score over five annual waves from ages 12 to 16. This 4-item subscale includes items such as “I get nervous around people I do not know well” (1 = *almost never* to 3 = *often*). The reliabilities were adequate ranging from .80 to .86 across all five waves.

Relationship Quality

Support and conflict subscales from the Network of Relationships Inventory (Furman & Buhrmester, 1985) measured the quality of best friend and parental relationships in adolescence and emerging adulthood. For perceived support and perceived conflict in adolescence, we created a mean score over five annual waves from ages 12 to 16. Perceived support and conflict in emerging adulthood were measured at age 21.

Support

The 12-item support subscale includes items such as “How often do you turn to your mother/father/best friend for support with personal problems?” (1 = *little to not at all* and 5 = *as much as possible*). The reliabilities for perceived support from mothers (ranging from .97 to .91), fathers (ranging from .91 to .93), and best friends (ranging from .92 to .93) were good in all six waves.

Conflict

The 6-item conflict subscale includes items such as “How often do you and your mother/father/best friend disagree and get into arguments?” (1 = *little to not at all* and 5 = *as much as possible*). The reliabilities of perceived conflict with their mother (ranging from .85 to .94), father (ranging from .87 to .93), and best friend (ranging from .84 to .93) were good at all six waves.

Analytic Strategy

To answer our first research question, we conducted a bivariate logistic regression to examine how delinquency and social anxiety are related to each other in adolescence. To answer our second research question, we conducted hierarchical linear regressions to

examine the effects of adolescent social anxiety and adolescent delinquency (abstention) on perceived parent and best friend relationship quality in emerging adulthood. We controlled for education level and gender in all analyses. Furthermore, in order to adequately examine the predictive value of adolescent social anxiety and delinquency abstention, we controlled for perceived relationship quality in adolescence in the regression models (i.e., stability over time). In other words, in each of these models, in the first step, we entered gender, education, and perceived relationship quality in adolescence as control variables, along with adolescent social anxiety and adolescent delinquency status as predictors. In the second step, we included the interaction term between adolescent social anxiety and adolescent delinquency status. Therefore, the second step included all control variables, conditional main effects for social anxiety and delinquency status, and an interaction term. Regression analyses were conducted in *Mplus* version 7.3 and made use of the MLR estimator to account for any potential non-normality of variables. Posthoc analyses of interaction effects were conducted using the PROCESS macro (Hayes, 2013) for SPSS.

Results

Descriptive Statistics

Table 1 presents means and standard deviations, and Table 2 presents the correlations between adolescent study variables. Adolescent social anxiety was weakly, but negatively related to delinquency and perceived support, and positively related to perceived conflict in best friend, mother, and father relationships in adolescence. Additionally, during adolescence, being ever-delinquent was negatively correlated with mother support and positively correlated with best friend support and perceived conflict with mother, father, and best friends.

Social Anxiety and Delinquency

In examining our first research question on the relation between social anxiety and delinquency in adolescence, we found that consistent with the *protective perspective*, scoring higher on social anxiety significantly decreased the odds of being an ever-delinquent in adolescence ($OR = 0.60$; 95% C.I. = 0.41-0.88; $n = 870$). Indeed, delinquency abstainers ($M = 1.63$, $SD = 0.46$) reported higher social anxiety than ever-delinquent adolescents ($M = 1.49$, $SD = 0.39$).

Table 1. Means (*M*) and Standard Deviations (*SD*) for Social Anxiety and Perceived Relationship Quality Across Adolescence and Emerging Adulthood

	Age 12		Age 13		Age 14		Age 15		Age 16		Grand Mean Adolescence		Age 21	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Social Anxiety	1.50	0.50	1.53	0.51	1.51	0.52	1.53	0.54	1.53	0.55	1.52	0.41		--
Best Friend Support	3.03	0.86	3.16	0.78	3.16	0.77	3.26	0.75	3.33	0.71	3.18	0.60	3.48	0.64
Best Friend Conflict	1.31	0.44	1.38	0.49	1.38	0.51	1.32	0.46	1.30	0.45	1.34	0.33	1.22	0.38
Mother Support	3.58	0.64	3.59	0.64	3.53	0.68	3.47	0.68	3.51	0.65	3.54	0.52	3.78	0.61
Mother Conflict	1.41	0.46	1.46	0.50	1.53	0.56	1.56	0.64	1.53	0.61	1.50	0.41	1.46	0.58
Father Support	3.41	0.78	3.44	0.73	3.35	0.77	3.31	0.76	3.33	0.74	3.35	0.60	3.40	0.70
Father Conflict	1.40	0.49	1.44	0.55	1.53	0.61	1.54	0.65	1.52	0.63	1.48	0.45	1.37	0.53

Note. The grand means in adolescence are based on the following sample sizes: social anxiety $n = 923$; best friend variables $n = 922$; mother variables $n = 921$; father variables $n = 904$.

Table 2. Partial Correlations for Social Anxiety, Delinquency (Abstinence), and Perceived Relationship Quality in Adolescence

Measure	1.	2.	3.	4.	5.	6.	7.
1. Social Anxiety	--						
2. Ever-Delinquent ^a	-.11**	--					
3. Mother Support	-.13***	-.08*	--				
4. Mother Conflict	.11**	.14***	-.41***	--			
5. Father Support	-.17***	-.06	.68***	-.27***	--		
6. Father Conflict	.13***	.14***	-.23***	.49***	-.41***	--	
7. Friend Support	-.17***	.07*	.51***	-.09**	.50***	-.11**	--
8. Friend Conflict	.16***	.11**	-.16***	.35***	-.20***	.38**	-.21***

Note. *** $p < .001$. ** $p < .01$, * $p < .05$. Correlations are adjusted for gender and education level ($n = 847$). Correlations between delinquency and continuous variables are point-biserial. ^aAbstainers = 0, Ever-Delinquent = 1.

Social Anxiety, Delinquency, and Relationship Quality

We conducted two separate hierarchical linear regressions, to examine whether considering both adolescent social anxiety and delinquency in the context of perceived relationship quality in emerging adulthood would provide a more nuanced picture of the relation between social anxiety and delinquency.

Support

First, the results for perceived support (Table 3) show that, after controlling for gender, education, and perceived support in adolescence, adolescent social anxiety was negatively related to perceived best friend, mother, and father support in emerging adulthood. Being ever-delinquent was not related to perceived support in any of our three relationship domains five years later. In the final model step, we added an interaction term to assess if social anxiety and delinquency in adolescence interacted to predict perceived relationship quality in emerging adulthood.

We found a significant interaction between anxiety and delinquency in all relationship domains (Figure 1). Follow-up analyses showed that all three interactions were driven by an effect of social anxiety on perceived support in ever-delinquent adolescents (best friend support, $t = 3.39$ -, $p < .001$; mother support, $t = -3.04$, $p = .002$; father support $t = -3.20$, $p = .001$). Social anxiety was not related to perceived relationship quality in abstaining adolescents (best friend support, $t = 0.01$, $p = .99$; mother support, $t = 0.67$, $p = .51$; father support, $t = 1.04$, $p = .30$).

Table 3. Summary of Hierarchical Regression Analyses for the Relation Between Social Anxiety Symptoms (SA), Ever-delinquent, and Perceived Support in Emerging Adulthood

Emerging Adult Perceived Support (T6)	Model 1			Model 2		
	B	SE B	β	B	SE B	β
Best Friend Support						
Female	0.04	0.05	0.03	0.05	0.05	0.04
High Education	-0.20	0.06	-0.13**	-0.20	0.06	-0.13***
T1-T5 Support	0.49	0.05	0.45***	0.49	0.05	0.44***
T1-T5 Social Anxiety	-0.15	0.05	-0.10**	0.00	0.07	0.00
T1-T5 Ever Delinquent	-0.07	0.05	-0.05	-0.06	0.05	0.04
SA x Ever Delinquent				-0.21	0.09	-0.12*
	$R^2 = .252***$			$R^2 = .256***$		
Mother Support						
Female	0.04	0.04	0.04	0.05	0.04	0.04
High Education	-0.09	0.05	-0.06	-0.10	0.05	-0.07
T1-T5 Support	0.63	0.05	0.50***	0.63	0.05	0.49***
T1-T5 Social Anxiety	-0.10	0.04	-0.07*	0.05	0.07	0.03
T1-T5 Ever Delinquent	0.05	0.05	0.03	0.06	0.05	0.04
SA x Ever Delinquent				-0.21	0.08	-0.12*
	$R^2 = .273***$			$R^2 = .278***$		
Father Support						
Female	0.07	0.05	0.05	0.08	0.05	0.06
High Education	-0.09	0.06	-0.06	-0.09	0.06	-0.06
T1-T5 Support	0.64	0.05	0.54***	0.64	0.05	0.54***
T1-T5 Social Anxiety	-0.12	0.06	-0.07*	0.09	0.09	0.06
T1-T5 Ever Delinquent	0.07	0.06	0.04	0.09	0.06	0.06
SA x Ever Delinquent				-0.31	0.11	-0.15**
	$R^2 = .313***$			$R^2 = .321***$		

Note. *** $p < .001$, ** $p < .01$, * $p < .05$. Continuous predictors have been mean-centered. The sample size in each analysis was best friend $n = 686$, mother $n = 691$, and father $n = 666$.

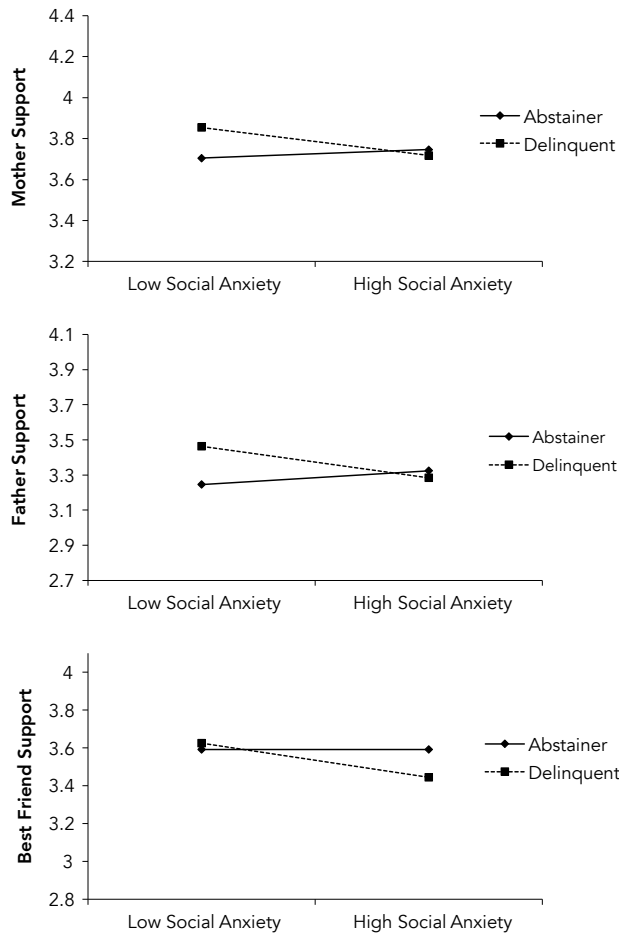


Figure 1. Significant interaction patterns for the relationships between perceived relationship support in emerging adulthood adjusted for gender, education and adolescent perceived relationship support. Y-axis represents +/- 1 SD around the mean.

Conflict

After controlling for gender, education, and adolescent perceived conflict social anxiety was related to perceived mother conflict, but not father or best friend conflict. Being ever-delinquent was not related to perceived conflict in any emerging adult relationship domains (Table 4). Further, social anxiety and adolescent delinquency did not interact to significantly predict perceived conflict. The only consistent predictor of perceived conflict in emerging adulthood was perceived conflict in adolescence.

Table 4. Summary of Hierarchical Regression Analyses for the Relation Between Social Anxiety (SA) Symptoms, Ever Delinquency, and Perceived Conflict in Emerging Adulthood

Emerging Adult Perceived Conflict (T6)	Model 1			Model 2		
	B	SE B	β	B	SE B	β
Best Friend Conflict						
Female	-0.10	0.03	-0.14***	-0.10	0.03	-0.14***
High Education	0.00	0.03	0.00	0.00	0.03	0.00
T1-T5 Conflict	0.40	0.06	0.33***	0.40	0.06	0.33***
T1-T5 Social Anxiety	0.02	0.03	0.03	0.01	0.04	0.01
T1-T5 Ever Delinquent	0.02	0.03	0.02	0.02	0.03	0.02
SA x Ever Delinquent				0.02	0.06	0.02
	$R^2 = .147***$			$R^2 = .148***$		
Mother Conflict						
Female	-0.02	0.05	-0.02	-0.03	0.05	-0.02
High Education	0.14	0.05	0.10**	0.14	0.05	0.10**
T1-T5 Conflict	0.55	0.06	0.39***	0.55	0.06	0.38***
T1-T5 Social Anxiety	0.10	0.05	0.07*	0.03	0.09	0.02
T1-T5 Ever Delinquent	0.01	0.05	0.01	0.00	0.05	0.00
SA x Ever Delinquent				0.09	0.10	0.06
	$R^2 = .164***$			$R^2 = .165***$		
Father Conflict						
Female	-0.12	0.04	-0.12**	-0.12	0.04	-0.11**
High Education	0.02	0.05	-0.02	-0.02	0.05	-0.02
T1-T5 Conflict	0.48	0.06	0.39***	0.48	0.06	0.40***
T1-T5 Social Anxiety	0.06	0.04	0.04	0.08	0.08	0.06
T1-T5 Ever Delinquent	-0.04	0.04	-0.03	-0.03	0.04	-0.03
SA x Ever Delinquent				-0.04	0.09	-0.02
	$R^2 = .170***$			$R^2 = .170***$		

Note. *** $p < .001$, ** $p < .01$, * $p < .05$. Continuous predictors have been mean-centered. The sample size in each analysis was best friend $n = 686$, mother $n = 691$, and father $n = 665$.

Discussion

Social anxiety and delinquency are prevalent in adolescence, both with negative effects on interpersonal relationships, but less is known about their relation to each other. Two different views of the relationship between social anxiety and delinquency have been proposed: according to the *protective perspective*, social anxiety may protect adolescents from delinquency and other antisocial behaviour (e.g., Nelemans et al., 2016; Pine et al., 2000) and are therefore negatively related. Whereas according to the *co-occurring perspective*, social anxiety and delinquency are separate but positively related (e.g., Galbraith et al., 2014; Sareen et al., 2004). The first aim of this study was to further examine these potential relations in adolescence, while the second aim was to examine the interplay between adolescent social anxiety and delinquency on parental and best friend relationship quality in emerging adulthood.

Social Anxiety and Delinquency

In adolescence, we found that consistent with the *protective perspective* (e.g., Pine et al., 2000), delinquency abstainers report higher social anxiety than ever-delinquents. Further, these differences in social anxiety during adolescence are not only supportive of the idea social anxiety may operate as a protective factor against delinquency, but also that there may be an upside to experiencing some non-clinical social anxiety (Rapee & Spence, 2004). For example, in adolescence while delinquency abstention was related to higher social anxiety and lower perceived best friend support, delinquency abstention was also related to less perceived conflict in all relationship domains as well as more perceived mother support. This is consistent with research that found that delinquency abstention in adolescence was associated with better perceived relationships with parents and teachers (Brezina & Piquero, 2007; Chen & Adams, 2010). Therefore, in adolescence being a delinquency abstainer may buffer some of the negative interpersonal effects of social anxiety.

Social Anxiety, Delinquency, and Relationship Quality

Examining the relation between social anxiety, delinquency, and perceived support, we found that the effects of being socially anxious in adolescence were enduring, negatively impacting perceived support in best friend, mother, and father relationships five years later. There was no effect of adolescent delinquency on perceived support in any of these

domains. This finding may suggest that the negative interpersonal consequences of (minor) delinquency are not as enduring as those of social anxiety. This is consistent with research suggesting that the majority of adolescent delinquency is age-related experimentation, whereas only a small proportion of adolescents will continue to demonstrate antisocial behaviour in adulthood (e.g., Moffitt et al., 2002). Adolescents may transition in and out of delinquency with more variation than they do with social anxiety.

Importantly, adolescent social anxiety and adolescent delinquency status interacted to predict perceived support in emerging adulthood: In ever-delinquent adolescents, we found that higher social anxiety was related to decreased support, and lower social anxiety was related to increased support. Therefore, within ever-delinquent adolescents, the results are consistent with the *co-occurring perspective*: Ever-delinquent adolescents who score higher on social anxiety, have worse perceived relationship support in all domains compared to ever-delinquent adolescents who score lower on social anxiety. However, there are no differences between abstainers who report higher or lower social anxiety on their levels of parental or best friend support in emerging adulthood. Being a delinquency abstainer may attenuate the predictive link between social anxiety and perceived support in emerging adulthood (i.e., also attenuating any higher support generally associated with lower anxiety). An explanation for this latter finding could be related to the perception of abstainers as well-adjusted adolescents (Brezina & Piquero, 2007) and later, well-adjusted adults (Moffitt et al., 2002). For example, parents of abstaining adolescents may not perceive the need to modulate their support according to anxiety levels as previous research has found adolescent abstainers to be high in conscientiousness (i.e., Mercer et al., 2016), and self-constraint (i.e., Boutwell & Beaver, 2008). Therefore, it is plausible that abstainers' parents may perceive them as more mature and in less need of explicit support as they enter emerging adulthood. Indeed, higher conscientiousness is associated with maturity and the mastery of social roles (Roberts & Mroczek, 2008). Parents of ever-delinquent adolescents who are low in anxiety, however, may believe that expressed support could be more beneficial, as delinquency is associated with less maturity in personality development (Klimstra, Hale, Raaijmakers, Meeus, 2012). When an adolescent engages in some delinquency and reports higher socially anxiety, however, parents and peers may have more difficulty expressing or maintaining support into emerging adulthood, perhaps leading to the negative relation between anxiety and support seen in ever-delinquent adolescents.

However, examining the relation between social anxiety, delinquency, and perceived conflict in emerging adulthood we found that being socially anxious in adolescence was only related to increased perceived conflict with mothers, five years later. One of the reasons we did not find consistent enduring effects of adolescent social anxiety on perceived conflict in emerging adulthood could be related to findings suggesting that

transitions to from adolescence to adulthood may have different effects on positive and negative parent-child interaction patterns (Aquilino, 1997). For instance, parents with young adults living at home reported more emotional closeness, shared activities and perceived support, but also more conflicts and issues with control compared to parents with young adults living outside the family home (Aquilino, 1997). While we did not examine any transitions in this study, given the modest amount of variance in perceived relationship quality explained by adolescent factors, additional factors are clearly related to perceived relationship quality. Therefore, we consider these differential results to primarily support the importance of considering both negative and positive aspects of relationship quality (i.e., Berndt, 2002) as both aspects may be differentially related to other constructs, and in this case - social anxiety.

Strengths, Limitations, and Suggestions for Future Research

Some limitations should be taken into consideration while interpreting the results from this study. First, although this study was a longitudinal, prospective study of adolescents over a 10-year time period, all of the measures included were self-reported. It would be advantageous if future research could corroborate these results with other measures of relationship quality. This is particularly important when considering that anxious people have a tendency to under-perceive relationship quality (e.g., Rodebaugh, Lim, Shumaker, Levinson & Thompson, 2015). Second, we aimed to examine the enduring individual and combined effects of adolescent social anxiety and delinquency (abstention) on perceived best friend and parental relationship quality in emerging adulthood. While we were able to prospectively do so, an average age of 21 is still quite young. Future research should attempt to re-examine the predictive validity of adolescent social anxiety and delinquency (abstention) in later adulthood. Third, because this study used a community sample of adolescents primarily from two-parent homes with somewhat higher than average educational attainment, it is less likely that there are many severely delinquent adolescents whose behaviour may reach diagnostic or clinical levels in this sample. However, this limitation is consistent with our operationalization of delinquency abstainers versus ever-delinquents rather than a continuous measure of delinquency that would reflect a larger range of seriousness. Therefore, the relation between social anxiety frequency, seriousness, and chronicity of delinquency could be an avenue to be explored in future studies. Finally, because both social anxiety and delinquency in adolescence can lead to problems in interpersonal relationships (e.g., Rapee & Spence, 2004; Steinberg & Monahan, 2007), we focused on their interplay in parent and best friend relationships. However, as our results suggest, the relation between social anxiety and delinquency can

differ between domains. Future research should expand upon these domains to broaden our understanding of when the protective versus co-occurring perspectives are most relevant.

Conclusion

The results of this study highlight the importance of examining the interplay between delinquency and anxiety in relation to different interpersonal outcomes. Future research should consider the relation between social anxiety and delinquency in predicting different outcomes across different ages to further generalize these results. Finally, special attention to adolescent delinquency abstainers may be warranted, as social anxiety may be protective leading to abstinence from delinquency in adolescence. However, the mature status of adolescent delinquency abstainers may in turn be related to different expectations and outcomes in parental relationship quality later in life.

CHAPTER 6

Childhood Predictors and Adult Life Success of Adolescent Delinquency Abstainers*

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* N.M. conceptualized the study, analyzed the data, and wrote the manuscript. D.F., M.T., provided feedback on the conceptualization. D.F., M.T., L.K., S.B., and W.M. provided feedback on the analyses and manuscript.

Abstract

While much is known about adolescent delinquency, considerably less attention has been given to adolescent delinquency abstention. Understanding how or why some adolescents manage to abstain from delinquency during adolescence is informative for understanding and preventing adolescent (minor) delinquency. Using data from the Cambridge Study in Delinquent Development (N = 411 males) to compare abstainers, self-report delinquents and convicted delinquents we found five childhood factors (ages 8-10) that predicted adolescent abstention (ages 10-18). First, we find that adolescent abstainers possess characteristics opposite to those of convicted delinquents (namely, abstainers are high on honesty, conformity and family income). However, we also found that abstainers also share some childhood characteristics with convicted delinquents (namely, low popularity and low school achievement). A latent class analysis indicated that the mixed factors predicting abstention can be accounted for by two groups of abstainers: an adaptive group characterized by high honesty and a maladaptive group characterized by low popularity and low school achievement. Further, validation of these two types of abstainers using data collected at age 48 suggested that adaptive abstainers outperform all other adolescents in general life success, whereas maladaptive abstainers only fare better than delinquent adolescents in terms of lower substance use and delinquency later in life.

Introduction

Most adolescents engage in some form of delinquent or rule-breaking behaviour (Moffitt, Harrington, Caspi & Milne, 2002). Indeed, decades of research have examined predictors of adolescent delinquent behaviour (for an overview, see: Farrington, 1995; Loeber & Dishion, 1983). Research has more recently focused on distinguishing between adolescents whose delinquent behaviour persists well into adulthood and those who eventually desist (Loeber, Pardini, Stouthamer-Loeber & Raine, 2007; Van Domburgh, Loeber, Bezemer, Stallings & Stouthamer-Loeber, 2009). As a result, much is known about the timing of (serious) delinquency onset, and eventual persistence or desistance. However, less attention has been paid to an alternative question: Can we predict which adolescents will manage to abstain from delinquency altogether?

A small group of adolescents, referred to as the abstainers (5-15%), manage to avoid engaging in delinquent behaviours during adolescence (e.g., Brezina & Piquero, 2007; Chen & Adams, 2010, Johnson & Menard, 2012; Moffitt, Caspi, Harrington & Milne, 2002). However, little is known about this unique group of adolescents and what may lead them to abstain from delinquent behaviour. This limited knowledge is partly due to the relatively few studies on abstention, and even fewer studies on its early predictors. A better understanding of abstainers and how they manage to avoid delinquency during a period when it is most common is informative for adolescent delinquency prevention. Additionally, studying how or why some adolescents abstain is most informative when these abstainers are being compared to different types of delinquent adolescents. More specifically, we argue that instead of comparing abstainers and non-abstainers (delinquents), a further nuanced distinction within delinquent adolescents is needed to draw informative conclusions regarding not only abstention, but also the delinquency often considered adaptive in ordinary adolescents (Moffitt, 2008). Therefore, when examining the potential childhood predictors of abstention, we consider a distinction between three groups of adolescents: adolescent abstainers, the majority of adolescents who engage in some delinquency, and the more serious adolescent offenders.

Delinquency Abstention: Theory and Literature

Predicting Abstention

We consider two alternative explanations for adolescent abstention based on childhood predictors: the linear hypothesis and the discrete group hypothesis. The linear hypothesis suggests that the factors that predict abstention will be the inverse of factors known to predict serious delinquents out of the majority of adolescents who engage in some

delinquency. For example, if poor parent-child relationships predict delinquency, the most serious delinquents will have the poorest parent-child relationships and abstainers will have the strongest parent child relationships, with the majority of adolescents falling somewhere in between abstainers and serious delinquents. Alternatively, the discrete group hypothesis suggests that abstention is the result of unique factors unrelated to the distinction between different groups of delinquents. For example, abstainers may be shy adolescents, socially withdrawn and excluded from their peer groups, whereas we have no such expectations for these characteristics to distinguish between who will be a serious delinquent compared to the majority of adolescents.

These two alternative explanations for the relationship between abstention and delinquency can be inferred from existing theory on adolescent delinquency. On the one hand, the linear hypothesis is derived from delinquency theories that provide implicit hypotheses for abstention based on their expectations of delinquency as a linear construct. An implication of viewing delinquency on a continuum is that abstention should be predicted by the same variables as offending - due to the presence of promotive factors (i.e., factors that lower the probability of offending, regardless of risk; Farrington, Loeber, Jolliffe & Pardini, 2008). Social control theory (Hirschi, 1969) is an example of a theory that implicitly supports the linear hypothesis. Specifically, social control theory hypothesizes that adolescents are equally likely to perceive delinquency as rewarding. However, adolescents vary in the strength of their social bonds and the costs of jeopardizing these bonds aid some adolescents in avoiding delinquency. Therefore, promotive factors, such as strong bonds to parents, school or conventional others, prevent adolescents from engaging in delinquency (abstainers), whereas delinquent adolescents have weak or poor bonds that do not aid in deterring them from delinquency. In fact, most literature to date supports this framework - suggesting that abstainers generally have stronger bonds to parents (Johnson & Menard, 2012), teachers (Piquero, Brezina & Turner, 2005) or possess other promotive factors such as being high in moral beliefs (Brezina & Piquero, 2007) or prosocial attitudes contrary to the poor parental relationships, poor school functioning, low moral beliefs and antisocial attitudes often related to delinquency.

On the other hand, theory directly pertaining to delinquency abstention during adolescence is limited: Moffitt's developmental taxonomy is the only theory to date that has explicit hypotheses regarding abstainers and therefore forms the basis for the discrete group hypothesis in this paper. The developmental taxonomy (Moffitt, 1993; Moffitt et al., 2002) expects that - motivated by their desire for autonomy - adolescents who engage in minor delinquency and rule-breaking do so by mimicking (delinquent) peers. Following from this reasoning, the developmental taxonomy expects that some (minor) delinquency during adolescence is normative. Abstainers, therefore, are

adolescents who have characteristics seen as undesirable by more popular peers, or that leave them reluctant, unable or restricted from joining (delinquent) peer groups - leading to abstention from age-normative delinquency. There is some evidence in support of the discrete group hypothesis as abstainers have been found to be fearful, shy, passive, unemotional and have verbal communication difficulties in childhood (Owens & Slocum, 2015). Furthermore, abstainers are at least partially excluded from the popular (delinquent) peer groups during adolescence (Chen & Adams, 2010; Rulison, Kreager & Osgood, 2014). Taken together, theory and literature point to two alternative explanations of abstention - the linear and the discrete group hypotheses - that will be examined in this study.

Two Groups of Abstainers?

By examining the linear and discrete group hypotheses, we aim to provide insight into the relationship between abstention and delinquency to better understand the development of abstainers. Furthermore, we take this approach one step further, by suggesting that these two alternative hypotheses may actually address two different groups of abstainers. Indeed, the possibility of heterogeneity within abstainers has been discussed previously (see: Hendrix, 2014, Johnson & Menard, 2012). Furthermore, the implicit and explicit theories of abstention are divided on more than just the linear versus discrete group hypotheses about the factors that would predict abstaining. These two perspectives also differ on whether or not they would consider abstention to be adaptive behaviour: the linear hypothesis may explain one group of adolescents who are characterized by promotive factors and adaptive functioning and the discrete group hypothesis may better represent a second group of abstainers characterized by unique factors and maladaptive functioning.

Current Study

The main aim of the current study is to better understand adolescent delinquency abstainers by examining two alternative expectations for the childhood factors that predict abstention. Specifically, we will examine these plausible explanations for abstention when compared to different groups of adolescents who engage in different levels of delinquency with three exploratory hypotheses. Our first hypothesis is the linear hypothesis: Abstainers will be predicted by the inverse of childhood factors that distinguish between the majority of adolescents and serious delinquents. Our second

hypothesis is the discrete group hypothesis: Abstainers will be predicted by unique factors that do not distinguish between the majority of adolescents and serious delinquents. Finally, we consider a third hypothesis that the first two competing hypotheses may be reconciled by the existence of two different groups of abstainers.

Our study differs from previous research on early predictors of delinquency in that we have an overt focus on predicting abstaining compared to the majority of adolescents who engage in some delinquent behaviour. Our paper also adds to the small body of abstention literature as one of the few papers to measure delinquency abstention across the entire span of adolescence (ages 10 to 18). Moreover, by combining literature and theory on adolescent delinquency abstention, this the first paper to test whether these two alternative expectations regarding the predictors and nature of abstainers may be reconciled by the existence of different groups of adolescent abstainers. Furthermore, we examine whether different groups of abstainers can be labeled as adaptive or maladaptive based on their achievement of developmental life tasks by age 48. Together these aspects of our study allow us to uniquely contribute to a better understanding of why aren't all adolescents delinquent.

Method

Sample

The Cambridge Study in Delinquent Development (CSDD) is a prospective, multi-informant longitudinal survey of the development of offending and antisocial behaviour in 411 males from South London. Data collection began in 1961-62 and the sample primarily consists of boys who were aged 8-9 and on the registers of six state primary schools within a one-mile radius of a research office that had been established.

Most of the boys (87%) were Caucasian and have British origins. At age 8, 94% of the boys could be described as working-class based on their father's occupation (skilled, semi-skilled or unskilled manual workers), compared with the national figure of 78% at that time. The majority of the boys were living in conventional two-parent families.

Procedure

The boys were interviewed and given assessments at their schools at ages 8, 10 and 14. They were interviewed at the research office at 16, 18, and 21 and at home at 25, 32 and 48. The psychologists administering the assessments and the psychiatric social workers

who conducted the interviews assured boys of the confidentiality of their assessments and answers. Attrition in the CSDD is negligible given the study's duration: At age 14, 406 boys were assessed. At age 18, 389 of the original 411 were interviewed. Of the 22 missing, one had died, one could not be located, six were abroad, 10 refused and four more had parents who refused on their behalf; At age 48, 365 of the 394 still alive were interviewed (93%). The assessments in schools measured factors such as intelligence, personality and psychomotor impulsivity, whereas the interviews focused on topics such as living circumstances or leisure activities including drinking and drug use as well as self-reported delinquency. During the school assessments, peers were given questionnaires in which they rated the boys on characteristics such as popularity and daringness. Furthermore, teachers completed questionnaires when the boys were aged about 8, 10, 12 and 14. The teacher questionnaires addressed topics such as restlessness or poor concentration, school achievement and disruptive behaviour in class.

In addition to the interviews and assessments with the boys, their peers and teachers, parents were also interviewed annually from when the boys were age 8 to approximately 15 years old. Although the mother was the primary informant, many of the boys' fathers were also interviewed. These interviews conducted by psychiatric social workers provided information about subjects such as family income, family composition, parental employment histories and child-rearing practices (including discipline and supervision). Parents were also assured of the confidentiality of their data. Finally, in order to obtain information regarding convictions for both the boys and their family members, searches were conducted in Criminal Record Office up to 1994 and in the Police National computer from then onwards.

The interviews at age 32 and 48 were approved by the Ethics Committee of the Institute of Psychiatry, Kings College London, and written informed consent was obtained from the participants. Earlier data collections were approved by the UK Home Office and verbal informed consent was obtained from the participants.

Measures

Self-Report Delinquency

To measure self-report delinquency, offences were presented on cards, and the males were asked to sort the cards according to whether or not they had ever committed each act during a specified reference period, and if they had, at what age they had first and last committed these acts. From the age 14 interview (median age = 14.9) the following 6 items were used: burglary, theft of motor vehicles, theft from motor vehicles, theft from machines (e.g., slot machines), shoplifting and vandalism. During the age 18 interviews

(median age = 18.7), the boys were asked to recall if they had engaged in any of the same 6 items in the last 3 years, if they had ever started fights in the last 3 years and if they had ever used drugs¹.

Convicted Delinquency

Conviction offenses included in this study are the following 8 items which overlap with the self-reported delinquency: burglary, shoplifting, theft from motor vehicles, theft of motor vehicles, theft from machines, violent offenses, vandalism and drug offenses, as well as 10 other offenses: fraud, theft from work, other theft, robbery, suspected persons, weapons offenses, receiving offenses, serious motor vehicle offenses, threatening and sexual offenses recorded from age 10-18.

Group Identification

Based on our a priori criteria for abstention: a zero score on all included self-report and conviction items between ages 10-18, we were able to identify 49 boys who we could classify as adolescent abstainers. There were 239 boys who indicated they were involved in adolescent delinquency via self-report data, but who were not convicted by age 18. These boys were classified as the self-report delinquents and serve as the reference group for the remainder of the analyses. Finally, 117 boys were convicted for at least one offense between 10-18, and these boys were classified as convicted delinquents^{2,3}. The convicted delinquents had a mean variety score ($M = 2.30$, $SD = 1.49$) for convictions across adolescence. However, the convicted delinquents also reported significantly higher mean variety score ($M = 5.35$, $SD = 2.83$) for self-report acts compared to the self-report delinquents ($M = 2.72$, $SD = 1.82$), $t(154.85) = 8.95$, $p < .001$. The convicted delinquents also reported a greater frequency of self-report acts ($M = 37.72$, $SD = 56.51$) compared to self-report delinquents ($M = 8.28$, $SD = 15.95$), $t(118.39) = 5.39$, $p < .001$. Finally, the convicted delinquents also report a significantly higher number of violent acts (i.e., starting fights; $M = 7.17$, $SD = 15.98$) compared to the self-report delinquents ($M = 1.45$, $SD = 6.19$), $t(127.21) = 3.66$, $p < .001$. Together, these differences indicate that the convicted delinquents are indeed a group of more troubled, more seriously delinquent adolescents compared to the self-report delinquent group.

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- 1 Two additional offenses were measured but excluded from this study: assault at age 14 (because the level nor direction of involvement (victimization) were not clear) and fraud at age 14 because it primarily consisted of not paying the (full) fare on public transportation which is substantially more minor than other self-report items which could all theoretically result in criminal convictions.
 - 2 The age when the offense was committed, and not the actual conviction date was recorded and used to determine adolescent convictions.
 - 3 6 males were excluded because they did not have any self-report data or complete conviction data. The current groups include males with at least one measurement point (age 14 or 18) of self-report delinquency data and/or complete conviction data (ages 10-18).

Childhood Predictors

Childhood predictors were included based on theory and previous literature on known risk factors for (serious) delinquency (e.g., Farrington and Ttofi, 2011; Loeber et al., 2007; Piquero, Farrington, Nagin & Moffitt, 2010) as well as any additional predictors theory or literature may have suggested for abstention.

Individual Childhood Predictors

Thirteen individual predictors were taken from parent, boy, teacher and peer interviews and questionnaires from ages 8-10. Therefore, we included: disobedience (*1 = overly-pliant to 3 = resistant to discipline*), combined peer ratings of popularity (*1 = least popular to 4 = most popular*), non-verbal IQ (*1 = 90 or below to 4 = 111 or above*), combined ratings of daring (*1 = least daring to 4 = most daring*), peer ratings of honesty (*1 = least honest to 4 = most honest*), psychomotor impulsivity (*1 = low to 5 = high*), concern with trying to be a credit to his parents (*1 = does not care to 3 = very concerned*), overall nervousness (*1 = low to 4 = high*), New Junior Maudsley Inventory (NJMI) extraversion (*1 = score 7 or less to 4 = score 12 or more*); NJMI neuroticism (*1 = 3 or less to 4 = 7 or more*), NJMI social conformity⁴ (*1 = 4 or less to 4 = 7 or more*), primary school achievement (*1 = low to 4 = high*) and lacking concentration (*1 = no to 2 = yes*).

Environmental Childhood Predictors

Eleven environmental predictors were extracted from parent and boy interviews. These factors are: parents interest in education (*1 = uninterested to 3 = very interested*); family income (*1 = inadequate to 3 = comfortable*); family size (*1 = no siblings to 6 = 5 or more siblings*); parental supervision (*1 = slack to 3 = rigid*); parent's authoritarian attitude towards discipline (*1 = good to 4 = poor*); parental marriage (*1 = bad to 3 = good*); overall mother nervousness (*1 = no symptoms to 3 = very nervous*); temporary separations from parents before age 10 (*1 = no separations to 3 = separations other than for hospitalization*); school delinquency (*1 = low to 3 = high*); criminal parent (*1 = no to 2 = yes*); delinquent older sibling (*1 = no to 2 = yes*).

Adult Outcomes

To measure adult outcomes for these adolescent groups, we used eight dichotomous indicators of life success measured at age 48 from The Life Success Score (Farrington et al.,

4 Originally titled the NJMI Lie scale, previous literature suggests lie measures in children better represent acquiescent or social conformist behaviour, and we have retitled it accordingly (see: Jones and Francis, 1995 for further discussion). Further, this measure is correlated with honesty ($r = .19, p < .001$) and daring ($r = -.13, p = .01$) in the directions expected by measures of conformity rather than lying.

2006). In this study, these indicators were separated into two domains and a cumulative domain score was calculated.

Self-Report Delinquency and Substance Use

The first domain is representative of self-report delinquency and substance use in the past 5 years: not being involved in fights, low alcohol use (i.e., not driving under the influence, not a heavy nor a binge drinker), no drug use (not using cannabis or other drugs), and no self-reported delinquency (burglary, theft from vehicles, shoplifting, theft from machines and vandalism). Further, we use official conviction records from ages 19-48 to assess later life delinquency onset.

General Life Success

The second domain is representative of general life success in the past 5 years: having satisfactory accommodation (i.e., whether he was a home owner, if the housing was of good quality and having moved less than three times in the last 5 years), having satisfactory employment (i.e., being currently employed, not of a low social class, had reasonable take home pay and no longer periods of unemployment in the last 5 years), having a satisfactory intimate relationship (i.e., living together or married for 5 years or more, not divorced in the last 5 years and generally getting on well with his partner) and satisfactory anxiety and depression scores (as measured by the General Health Questionnaire; Goldberg, 1978). Satisfactory scores are scored with a 1 for each item leading to a satisfactory delinquency and substance use scale (0 = *min.* to 4 = *max.*) and a general life success scale (0 = *min.* to 4 = *max.*)

Analytic Strategy

Linear versus Discrete Hypotheses

In order to examine our linear and discrete group hypotheses for adolescent abstention, we need to be able to examine the variation in delinquency across the distribution of the childhood predictor variables (Farrington et al., 2008). For example, is the effect of parenting on delinquency equal across the different ranges of parenting quality? Or does poor parenting increase the probability of delinquency, whereas there is no distinction between good-enough parenting and excellent parenting in decreasing the probability of delinquency? This variation can be examined by testing the high and low ends of a variable separately using a risk and promotive factors approach. Previous literature defines a risk factor as any factor that increases the probability of offending (e.g., Loeber & Dishion, 1983), whereas promotive factors are defined as those that lower the probability

of offending, regardless of risk (Farrington et al., 2008; Loeber et al., 2007; Stouthamer-Loeber et al., 2002; Van der Laan, Veenstra, Bogaerts, Verhulst & Ormel, 2010). Based on the direction of effects found using either end of a variable, we can determine if each variable has independent risk, promotive or mixed effects. Further, by defining a variable as either risk or promotive empirically rather than a priori we are able to consider the possibility that certain variables can be risk factors for some adolescents and promotive factors for others (Stouthamer-Loeber, Loeber, Wei, Farrington, Wikström, 2002).

We followed the method proposed by Stouthamer-Loeber et al., (1993) by trichotomizing all non-dichotomous variables, aiming as closely as possible to represent the top 25% (high) of the distribution and the bottom 25% (low) of the distribution. The middle 50% of the distribution is then the reference category. In doing so, we can empirically test the relationships between the dependent variable and different parts of the distribution of the independent variable. Trichotomization allows us to identify the possibility of non-linear relationships between predictors of abstention and delinquency in a straightforward, easy to interpret manner that is also not affected by any non-normality of variables (Van der Laan et al., 2010). Furthermore, Farrington and Loeber (2000) have shown that trichotomous categorization of variables has little effect on the overall conclusions about the importance of relevant variables. Two dichotomous environmental variables (i.e., criminal parent, delinquent sibling) and one individual factor were dichotomous (i.e., lacking concentration).

First, we examined the overall bivariate relationship between childhood predictors and adolescent group membership (abstainer, self-report delinquent, convicted delinquent) with Pearson's Chi-Square (X^2 ; trichotomized = 3×3 , dichotomized = 2×3). Second, for variables that were generally related to group membership using an two-tailed exploratory alpha ($\alpha < .10$)⁵, we further identified the nature of the effects (promotive, risk or mixed) by conducting logistic regressions separately for the high and low ends of the distribution (0 = 50%, 1 = *top or bottom 25%*, $\alpha < .05$). That is, we tested whether being in the high versus neutral, or low versus neutral, end of the variable predicted being an abstainer versus a self-report delinquent. We repeated this separately to test whether being in the high versus neutral, or low versus neutral, end of the variable predicted being a convicted delinquent versus a self-report delinquent.

Two Groups of Abstainers

Second, to test our final hypothesis, we conducted Latent Class Analyses (LCA; Nylund, Asparouhov & Muthen, 2007) in Mplus 7.1 to examine if there may be two groups of abstainers represented by the significant risk and promotive factors for abstention.

5 The following variables were not included for further analysis based on this exploratory criterion: mother nervousness, boy nervousness, extraversion, disobedience, psychomotor impulsivity and authoritarian parents.

Finally, we tested the validity of the LCA results by conducting ANOVAs to test mean differences on adult outcomes at age 48.

Results

Linear versus Discrete Hypotheses for Abstainers versus Self-Report Delinquents

To test the linear versus discrete hypotheses, we first examined if individual and environmental childhood factors could predict who would be an adolescent abstainer versus a self-report delinquent.

Individual Childhood Predictors

Out of the nine childhood predictors that were significant in the overall chi-square comparison, four of them distinguished between abstainers and self-report delinquents. All four of these effects were promotive (Table 1). More specifically, scoring in the highest 25% of the sample on honesty ($b = 0.83$, $SE = 0.38$, $p = .027$) and conformity ($b = 1.15$, $SE = 0.35$, $p = .001$) and being in the lowest 25% of the sample on primary school achievement ($b = 1.10$, $SE = 0.41$, $p = .008$) and peer ratings of popularity ($b = .85$, $SE = 0.40$, $p = .035$) all significantly increased the likelihood of being an adolescent abstainer compared to a self-report delinquent. There were no childhood factors in the individual domain that decreased the likelihood of being an abstainer compared to a self-report delinquent.

Environmental Childhood Predictors

Only one environmental predictor out of the nine that were significant in the chi-square analyses was significantly able to distinguish between abstainers and the self-report delinquents in the binary logistic regression models (Table 2). Scoring in the highest 25% of the sample on family income ($b = 0.73$, $SE = 0.35$, $p = .037$) significantly increased the odds of abstaining, and therefore can be classified as a promotive effect.

Linear versus Discrete Hypotheses for Convicted Delinquents versus Self-Report Delinquents

To test the linear versus discrete hypotheses, we also examined if individual and environmental childhood factors could predict who would be a convicted delinquent versus a self-report delinquent in adolescence.

Individual Childhood Predictors

All nine childhood predictors that were significant in the chi-square tests were able to significantly distinguish between convicted delinquents and self-report delinquents in the logistic regression models (Table 1). Only scoring in the lowest 25% of neuroticism could be classified as a promotive factor ($b = -0.66$, $SE = 0.32$, $p = .044$). Three factors could be classified as mixed. Scoring in the highest 25% on daring ($b = 0.95$, $SE = 0.26$, $p < .001$) and lowest 25% on honesty ($b = 0.75$, $SE = 0.28$, $p = .008$) and school achievement ($b = 0.93$, $SE = 0.28$, $p < .001$) significantly increased the odds of convicted versus self-report delinquency. However, scoring in the lowest 25% on daring ($b = -0.67$, $SE = 0.34$, $p = .046$) and highest 25% on honesty ($b = -0.72$, $SE = 0.35$, $p = .048$) and school achievement ($b = -0.66$, $SE = 0.32$, $p = .040$) also decreased the odds of being convicted during adolescence.

The final five predictors were classified as solely risk factors. More specifically, scoring in the lowest 25% of the sample in popularity ($b = 0.57$, $SE = 0.28$, $p = .042$), non-verbal IQ ($b = 0.75$, $SE = 0.27$, $p = .005$), concern with being a credit to parents ($b = 1.17$, $SE = 0.30$, $p < .001$), conformity ($b = 0.59$, $SE = 0.27$, $p = .027$), and concentration ($b = 0.54$, $SE = 0.24$, $p = .023$) all lead to an increase in the odds of being an adolescent convicted delinquent versus self-reported delinquent.

Environmental Childhood Predictors

Eight out of the nine childhood factors that were significant in the chi-square tests significantly predicted convicted delinquents versus self-report delinquents (Table 2). There were one two purely promotive effects: being in the highest 25% of the sample on parent's interest in child's education ($b = -0.63$, $SE = 0.29$, $p = .029$) and being in the lowest 25% on parental disharmony ($b = -0.65$, $SE = 0.31$, $p = .036$) significantly decreased the odds of offending. There was one mixed effect: Being in the highest 25% of school delinquency significantly increased the odds of being convicted in adolescence ($b = 0.81$, $SE = 0.30$, $p = .007$) whereas scoring in the lowest 25% of school delinquency significantly decreased the odds of being convicted ($b = -0.81$, $SE = 0.30$, $p = .006$). On the other hand, there were five childhood factors that were designated as pure risk factors. Being in the lowest 25% of the overall sample on family income ($b = 0.93$, $SE = 0.28$, $p = .001$) and parental supervision ($b = 0.76$, $SE = 0.29$, $p = .009$), the highest 25% of family size ($b = 0.77$, $SE = 0.28$, $p = .006$) having a criminal parent ($b = 1.54$, $SE = 0.26$, $p < .001$) and a delinquent sibling ($b = 1.22$, $SE = 0.34$, $p < .001$) all increased the odds of belonging to the convicted delinquent group.

Overall, comparing the five factors that predicted abstention to the 17 factors that predicted convicted delinquents from self-report delinquents we found three factors that support our linear hypothesis. Specifically, high scores on honesty, conformity

and income separate abstainers and from the self-report delinquents; low scores on honesty, conformity and income also separate convicted delinquents from the self-report delinquents. The additional two factors that predict abstainers from self-report delinquents, low popularity and low school achievement do not fully support the discrete group hypothesis, as they are not unique factors. However, they do indicate the possibility of non-linear relationships in predicting abstention.

Table 1. Results of Logistic Regression Models in Which Childhood Predictors from the Individual Domain are Predicting Abstainers and Convicted Delinquents Versus Delinquents.

Predictor	Odds Ratios	Effect	Odds Ratios	Effect
	Abstainers		Convicted Delinquents	
Popularity				
High	1.49	-	1.03	-
Low	2.34*	Promotive	1.76*	Risk
Non-verbal IQ				
High	1.33	-	0.82	-
Low	1.86	-	2.11**	Risk
Daring				
High	0.36	-	2.58***	Risk
Low	1.61	-	.51*	Promotive
Honesty				
High	2.30*	Promotive	0.49*	Promotive
Low	0.65	-	2.12**	Risk
Concern with Parents				
High	1.17	-	0.92	-
Low	0.54	-	3.23***	Risk
Neuroticism				
High	1.30	-	1.30	-
Low	1.20	-	0.52*	Promotive
Conformity				
High	3.16**	Promotive	.84	-
Low	0.69	-	1.81*	Risk
School Achievement				
High	1.85	-	0.52*	Promotive
Low	3.00**	Promotive	2.54**	Risk
Poor Concentration				
Yes	0.96	-	1.72*	Risk

Note. *** $p < .001$ ** $p < .01$ * $p < .05$, The Self-Report Delinquents are the reference group.

Table 2. Results of Logistic Regression Models in Which Childhood Predictors from the Environmental Domain are Predicting Abstainers and Convicted Delinquents Versus Delinquents.

Predictor	Odds Ratios	Effect	Odds Ratios	Effect
	Abstainers		Convicted Delinquents	
Education Interest				
High	1.35	-	0.53*	Promotive
Low	0.89	-	1.51	-
Family Income				
High	2.08*	Promotive	0.99	-
Low	1.48	-	2.52**	Risk
Family Size				
High	0.63	-	2.15**	Risk
Low	1.29	-	0.78	-
Parental Supervision				
High	1.74	-	0.68	-
Low	0.64	-	2.13**	Risk
Parent Disharmony				
High	0.53	-	1.58	-
Low	0.80	-	0.53*	Promotive
School Delinquency				
High	1.17	-	2.25**	Risk
Low	0.97	-	0.44**	Promotive
Temp. Separation				
High	0.44	-	1.86	-
Low	0.63	-	0.76	-
Criminal Parent				
Yes	1.84	-	4.68***	Risk
Delinquent Sibling				
Yes	1.48	-	3.37***	Risk

Note. *** $p < .001$ ** $p < .01$ * $p < .05$. The Self-Report Delinquents are the reference group.

Two Groups of Abstainers

In order to test the hypothesis that abstinence may be best represented by two different groups of abstainers, latent class analyses were conducted on the five childhood promotive factors that predicted abstinence. Following previously specified criteria for class selection (see: Nylund et al., 2007) a two-class solution was a better fit to the data than a one-class solution. The two-class solution had a lower sample size adjusted Bayesian Information

Criterion (BIC; 2 class SSA-BIC = 296.364, 1 class SSA-BIC = 309.812) and significant Vuong-Lo-Mendell-Rubin Likelihood Ratio Test ($p = .036$). Furthermore, the two-class solution had excellent entropy (.94) indicating a clear distinction between the two classes.

Table 3 indicates the number of boys in each class who are in the top 25% of the sample on honesty, conformity and family income and in the bottom 25% of the sample school achievement and popularity. The first class ($n = 27$) is characterized by more boys with adaptive factors, namely scoring in the highest 25% on honesty, which would be expected by theories suggesting that adolescent abstention is an adaptive alternative to delinquency. The second class ($n = 22$) is represented by all of the abstaining boys who score in the bottom 25% of low popularity, as well as the majority who do poorly in school. This group is consistent with the idea that adolescent abstention may be a reflection of maladaptive tendencies.

Table 3. The number of boys in each abstainer class in the top 25% of significant childhood promotive factors that predicted abstention from self-report delinquency.

Childhood Predictor (top 25%)	Abstainer Class 1 (n = 27)	Abstainer Class 2 (n = 22)
High Honesty (Pe)	16	4**
High Conformity (C)	15	7
High Family Income (Pa)	15	7
Low Popularity (Pe)	0	19***
Low School Achievement (T)	4	10*

Note: *** $p < .001$ ** $p < .01$, * $p < .05$ χ^2 contingency tables test for significance. Pe = Peer Report, C = Child Report, Pa = Parental Report, T = Teacher/School Report.

Adult Outcomes

As the first study to empirically indicate the possibility of two different types of adolescent abstainer groups based on competing linear and discrete group hypotheses, we tested the validity of this classification by examining potential differences in later life outcomes. A one-way ANOVA concluded that there were significant overall between group differences for general life success, Welch's $F(3, 50.03) = 5.46, p = .003$, as well as for self-reported substance use and delinquency Welch's $F(3, 56.42) = 11.32, p < .001$ at age 48. Figure 1 shows the pro-rated mean and standard errors for general life success and satisfactory substance use and delinquency. Games-Howell post-hoc tests show that adaptive abstainers were significantly better off in general life success represented by satisfactory employment, cohabitation and well-being in terms of anxiety and depression at age 48 compared to the maladaptive abstainers. Furthermore, the adaptive abstainers also report significantly

better life success compared to self-report delinquent and convicted adolescents. Mean level differences between the maladaptive abstainers and the delinquency groups are non-significant.

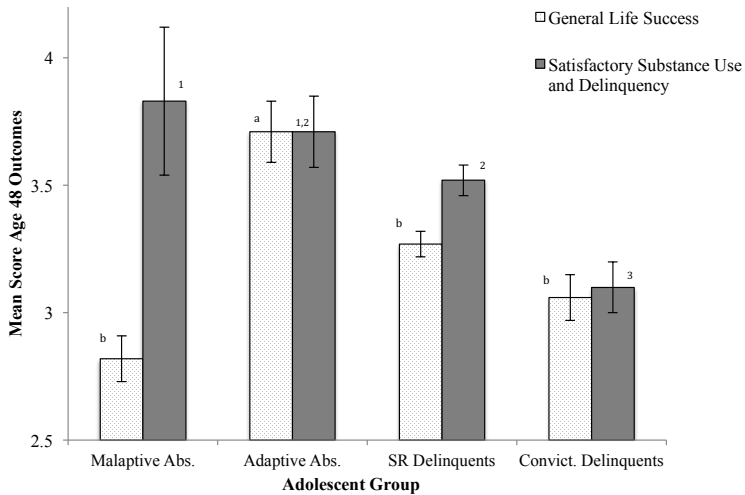


Figure 1. Pro-rated means and standard errors for cumulative scores of general life success and substance use and delinquency at age 48 for each adolescent trajectory. Means sharing the same superscript are not significantly different from each other at $p < .05$.

In terms of low substance use and delinquency at age 48 the two abstainer groups do not significantly differ. However, the maladaptive abstainers reported significantly more satisfactory scores in this domain compared to both delinquents and convicted delinquents, whereas the adaptive abstainers only reported a significantly better mean compared to the convicted adolescents (Figure 1).

Furthermore, we calculated the total frequency of convictions in adulthood based on official records from age 19 to age 48. A one-way ANOVA indicated there were overall significant between group differences Welch's $F(3, 69.36) = 17.08, p < .001$. Games-Howell post-hoc tests showed that the convicted adolescents had a significantly higher mean number of adult convictions ($M = 3.38, SD = 4.57$) than all other adolescents. The maladaptive abstainers ($M = 0.48, SD = 1.25$), adaptive abstainers ($M = 0.15, SD = .46$) and self-report delinquents ($M = 0.43, SD = 1.07$) did not significantly differ from each other. Results were identical when considering incidence of conviction rather than frequency. A one-way ANOVA indicated there were overall significant between group differences, Welch's $F(3, 60.71) = 24.64, p < .001$. Convicted adolescents had a higher incidence of adult convictions ($n = 68$) than all other groups. Again, the maladaptive abstainers ($n =$

4), adaptive abstainers ($n = 3$) and self-report delinquents ($n = 44$) did not significantly differ from each other in incidence of adult convictions.

Discussion

The primary aim of this paper was to determine which childhood factors could predict adolescent abstainers compared to adolescents who engage in self-report delinquency. More specifically, we used a risk and promotive factors trichotomization approach to test two plausible alternatives leading to abstention: We found support for the linear hypothesis – three predictors of abstention were the promotive ends of risk factors that also predict delinquency. However, we only found partial support for the discrete group hypothesis. We did not find that abstainers possessed unique childhood factors. Instead, we found that the remaining two characteristics of abstainers are shared with convicted delinquents. This finding still supports the discrete group hypothesis idea of a non-linear relationship between abstention and delinquency, although not predicted by unique factors. In addition, we found that there are two different groups of abstainers: an adaptive and a maladaptive group. Furthermore, in validating these two distinct abstainer groups, we found that they differ in their achievement of normative developmental life tasks. For instance, adaptive abstainers outperformed the maladaptive abstainers in general life success at age 48, a domain representing having satisfactory accommodation, employment, intimate relationships and positive mental health, but they did not differ in their use of alcohol, drugs, self-report delinquency or involvement in fights.

Linear versus Discrete Hypotheses

In terms of the support found for the linear hypotheses that childhood predictors of abstention are the inverse of predictors of delinquency, three of the five promotive factors that predict abstention compared to delinquency (high conformity, high honesty, high family income) are the promotive end of factors in which the bottom 25% were risk factors for convicted delinquency (low conformity, low honesty, low family income). These findings are consistent with previous research which found that abstainers tend to have high moral beliefs (Brezina & Piquero, 2007) or that delinquents tend to have delayed moral judgment development compared to non-delinquents (Stams et al., 2006) as well as research that generally suggests abstainers possess positive, protective factors when compared to delinquent adolescents (e.g., Brezina & Piquero, 2007; Chen & Adams, 2010; Piquero et al., 2005).

Furthermore, contrary to the expectations of the discrete group hypothesis: the remaining two childhood predictors of abstention were not unique but were identical to two predictors of convicted adolescents. Indeed, one benefit of the trichotomization approach is that it can identify factors that are risk factors for one group and promotive factors for another (Stouthamer-Loeber et al., 2002). Although we did not anticipate that low popularity and low school achievement would predict adolescent abstainers and convicted adolescents, these findings are in line with previous research suggesting that abstainers may be socially isolated (Owens & Slocum, 2015; Shedler & Block, 1990) or have fewer friends (Chen & Adams, 2010) when compared to non-abstaining adolescents. Additionally, some previous research has also suggested that abstainers may possess neurocognitive impairments (Owens & Slocum, 2015), which may be consistent with our finding that (some) abstainers have lower school achievement than self-report delinquents. Overall, it seems abstention is primarily predicted by individual characteristics of the child.

Two Groups of Abstainers

Our final hypothesis suggested that competing expectations for the factors that would lead to abstention could be explained by the existence of two different types of abstainers. Although we did not expect that abstainers and convicted offenders would be predicted from the self-report delinquents by their low scores on popularity and school achievement, this finding points to the presence of non-linear predictors of abstention and delinquency and suggests that there are two different types of abstainers. Indeed, we did observe two groups of abstainers in the data: one high on honesty – the adaptive abstainers; and the other unpopular and doing poorly at school – the maladaptive abstainers. We speculate that the mechanisms leading to abstention may be different between the two groups. For instance, the adaptive abstainers may be simply unwilling to engage in these normative delinquent behaviours with a host of individual resources available to support them (see also: Brezina & Piquero, 2007; Cook, Buehler & Henson, 2009), whereas the maladaptive abstainers may be excluded from or unable to join their peers in these activities due to social, cognitive or other impairments (see also: Owens & Slocum, 2015, Shedler & Block, 1990).

Adult Outcomes

Because we were the first to model two different groups of abstainers based on these competing theoretical hypotheses, we wanted to validate the distinction between these two groups using information on later life outcomes collected at age 48. Notwithstanding the fact the group sizes were small, when it comes to overall life success, the adaptive abstainers do better than all other adolescent groups (including the maladaptive abstainers). We suggest that this composite score of success in employment, accommodation, intimate relationships and mental health represents the healthy achievement of the main developmental tasks in life. On the other hand, adult outcomes measures at age 48 indicate that the maladaptive abstainers, despite the childhood predictors they share with convicted delinquents, outperform both delinquent and convicted adolescents (but not the adaptive abstainers) on measures of satisfactory self-report delinquency and substance use later in life. These mean differences seem to suggest that despite shared childhood predictors with convicted delinquents, it is unlikely that the maladaptive abstainers become more violent or develop addictions later in life compared to the two groups of adolescent delinquents.

However, previous research in the CSDD has found that a small group of adult-onset offenders do exist, and that these men are characterized by withdrawn or nervous behaviour that acts as a buffer against delinquency in adolescence but wears off later in life (Zara & Farrington, 2010). Furthermore, adult-onset offenders are more likely to have a lower IQ and poor school achievement compared to non-offenders (Zara & Farrington, 2009). Given the similarities in profile descriptions, it is important to consider whether the maladaptive abstainers are likely to become adult-onset convicted offenders. Although results indeed showed that some men were convicted for the first time after age 18, the vast majority (but not all) of these men belong to the self-report delinquency group. Importantly, these findings indicate that adult-onset hypotheses do not entirely account for either abstainer group irrespective of the similarities that adult-onset offenders in previous research may share with our group of maladaptive abstainers. Overall, our findings suggest that consistent with the childhood factors that differentiated these two groups: the adaptive abstainers appear to be the success stories when it comes to later life development, whereas the maladaptive abstainers may be socially or cognitively impaired leading to failure in their achievement in relationship, vocational, mental health and/or financial domains when compared to the adaptive abstainers. Although there were no unique predictors of abstention, the finding that two subgroups of abstainers exist, one discrete and maladaptive and one linear and adaptive partially supports the developmental taxonomy's expectations for a discrete group of maladaptive abstainers. Taken together, the results of this study question the validity of an often-used generalization from single

behavioural outcomes (i.e., delinquent versus non-delinquent) to general development (i.e., unhealthy versus healthy). Instead we should examine how similar or different these adolescents, their characteristics and environments are leading to their divergent pathways into an adulthood characterized by relatively lower life success.

Limitations

Although this study is the first to examine risk and promotive factors predicting abstention versus different levels of delinquency, using multi-informant prospective longitudinal data spanning across the life course from age 8 to age 48, the findings from our study should be interpreted alongside the following limitations: The CSDD is a prospective study of a relatively homogeneous working class group of mostly white South London males from two-parent family homes and therefore, is unlikely to have comparable variation in constructs such as SES, family structure or ethnicity to be fully generalizable to other contexts or more representative population samples and gives us no indication of predictors of abstention in adolescent females. Additionally, self-report delinquency was only measured at two time points during adolescence (age 14 and 18), which precluded conducting longitudinal group based trajectory analyses to define our different delinquent groups. Additionally, this paper does not address childhood-limited offending. Although this was outside the theoretical scope of this paper, it is an interesting avenue for future research to consider. The CSDD was designed when much was known about the risk factors of offending, and therefore includes a wealth of childhood factors related to risk for delinquency. At the time, little was known about potential promotive or unique factors predicting abstention and therefore the variable list is less comprehensive in these aspects. Moreover, to further strengthen our finding that individual characteristics may be more important than environmental factors in predicting abstention more detailed measures of the peer context should be tested. Indeed, research suggests the peer context, and in particular peer delinquency is an important environmental context for the prediction of (minor) delinquency (Farrington, 2003; Warr & Stafford, 1991). Finally, this study took an exploratory approach to examining this question by considering plausible competing hypotheses using a number of possible childhood predictors. Therefore, future research should focus on the subset of predictors we have identified to provide confirmatory results. Indeed, whether these findings, and in particular the size of the two different groups of abstainers and their different childhood predictors and adult outcomes, would be observed in different samples using different measures is a question which should be addressed by future research.

Conclusion

By focusing on abstinence, this paper represents a paradigm shift in the delinquency literature that is meant to shed light on a question that is often taken for granted – why aren't all adolescents delinquent? Overall, we found that abstinence is primarily predicted by individual characteristics of the child, whereas being convicted by age 18 is predicted by both individual and environmental risk factors. Consistent with the linear hypothesis, whereas high honesty, high conformity and high family income predicted abstinence, low honesty, low conformity and low family income predicted convicted delinquency. However, somewhat inconsistent with expectations derived from group-based theory, we did not identify any unique predictors of adolescent abstinence. Instead, we found that abstainers and convicted offenders were both less popular and had poor school achievement when compared to self-report delinquents. Further, it appears that competing theories about the nature of abstainers can be reconciled by the observation of two abstainer groups: first, adaptive abstainers, those who can be predicted by the inverse of delinquency and who are the most successful group in later adulthood. Second, the maladaptive abstainer, a clinically relevant and discrete group who share childhood predictors with convicted adolescents, who do not become delinquent but instead may possess social or cognitive impairments or otherwise problematic psychosocial profiles that negatively affect their relational, vocational and general well-being well into adulthood. This group of adolescents and the process by which they are identified markedly points to the necessity to consider the implications of problem behaviour (or lack thereof) within a larger developmental framework. Overall, results suggest that abstainers can be either conformists who possess protective factors or outcasts who may be excluded from the delinquent behaviour they may have otherwise participated in. Further research should take care to examine the possibility of shared beginnings in abstinence and convicted offending for a small group of maladaptive abstainers.

CHAPTER 7

General Discussion

The main aim of this dissertation was to examine the nature of minor delinquency in adolescence by, when possible, distinguishing abstention from minor delinquency and rule-breaking. Two adolescent delinquency theories, the developmental taxonomy (Moffitt, 1993) and social control theory (Hirschi, 1969), were used to guide our empirical research in Chapter 2 through Chapter 6. These two frameworks assume that some delinquency in adolescence is inherent and therefore non-delinquency should be explained. Indeed, as the results of this dissertation suggest – most adolescents do engage in at least one act of delinquency (between 78 – 90%; Chapters 4, 5 & 6). Furthermore, 28% of young people engaged in minor deviancy when given a 5-minute window of opportunity to do so (Chapter 3).

In addition to the main aim, this dissertation had five sub-aims based on research questions drawn from the similarities and differences between these delinquency theories. We addressed these sub-aims using longitudinal studies with between- and within-person analytical techniques as well as with one experimental study. First, we tested the assumption that delinquency in adolescence is related to personal identity formation across adolescence (Chapter 2). Second, we examined the potential causal influence of peer delinquency on own delinquency (Chapter 3). Third, we examined the theoretically proposed mechanisms underlying the role of time spent with (delinquent) peers leading to delinquency abstention (Chapter 4). Fourth, we examined whether delinquency abstainers are more (socially) anxious than non-abstainers and how this relates to parent and peer relationship quality (Chapter 5). Finally, we examined the primary conceptual differences between the two theoretical frameworks and the possibility that they are complementary instead of competing when considering two different groups of abstainers (Chapter 6). This final chapter aims to put this dissertation into a broader context by discussing the theoretical implications of this research, potential directions for future research on adolescent delinquency (abstention) as well as the strengths and limitations of our research.

Testing Theoretical Hypotheses: An Integrated Summary of Findings

Explanatory Hypotheses

In this dissertation, we aimed to address three explanatory hypotheses for adolescent delinquency (abstention) derived from combining and contrasting the developmental taxonomy and the social control theory (see: Introduction Table 1, TC1-TC3): the primary explanation for adolescent delinquency; the role of delinquent peers; and the primary explanations for delinquency abstention. Integrated findings from all chapters related to these guiding theoretical concepts are outlined below.

Social Maturity and Identity Commitments (TC1)

One of the main assumptions of the developmental taxonomy (Moffitt, 1993) is that adolescents are stuck in a maturity gap in which there is incongruence between their biological and social development. Adolescent delinquents attempt to ease the discomfort of this mismatch by engaging in delinquency in order to project the more “mature” adult-like status they wish to have. Relatedly, Erikson (1968) also expects that adolescence is a role-vacuum in which young people need move away from their childhood identifications while simultaneously trying to develop their own identity in order to successfully transition into adulthood.

Furthermore, the idea that the weakening or absence of social bonds, such as commitments to conventional goals, will lead to delinquency (Hirschi, 1969) corresponds with Erikson’s (1968) expectation that adolescents who struggle to find meaningful commitments will experience difficulties in successfully forming their own identity (Erikson, 1968). Indeed, some adolescents might have a difficult time navigating developmental changes across multiple different domains, particularly if they do not have the guidance or help provided by attachment to conventional adults or institutions (Singer, 2014).

Therefore, we considered personal identity formation and the corresponding ability to make firm identity commitments to be an indicator of social maturity and social bonding, and that identity and delinquency would be related across adolescence. Indeed, the results of Chapter 2 suggest that delinquency is linked to personal identity formation with delinquency preceding social immaturity. Between- and within-person increases in delinquency impeded identity formation by increasing identity confusion and decreasing identity commitments the following year, consistently across six years of adolescence. More simply put, delinquency predicted problems with identity formation. This finding is consistent with the idea that delinquency in adolescence may reflect a lack of social bonds and relatedly, the inability make strong commitments (e.g., identity commitments) that help to promote developmental processes. Adolescents who make calculation errors about the “cost” of being delinquent can damage already weak bonds and may be further ensnared into identity confusion because they are missing conventional goals to which they could re-orientate or commit.

However, within-persons, increased in-depth exploration of identity commitments predicted decreased delinquency one year later. This result gives some support to the idea that social maturity may protect adolescents from delinquency. In short, our findings suggest that the potentially ensnaring psychological consequences of adolescent delinquency are likely to be more of a hindrance than a help in the successful transition from adolescence to adulthood. Though, social maturity, with regards to adolescents’ efforts in forming their own personal identity, may protect adolescents against future delinquency.

The Influence of Delinquent Peers (TC2)

In Chapter 3, a 30-second exposure to a previously unknown deviant peer (confederate) increased young people's own deviancy during a 5-minute window of opportunity (Chapter 3). While adolescents who were not exposed to a deviant peer also engaged in some deviancy, exposure to a deviant peer significantly increased the amount of deviancy. Therefore, it seems that delinquent peers do have a causal influence on the amount of deviancy that young people engage in (see also: Gallupe et al., 2016; Paternoster et al., 2013). These results suggest that not only self-selection but also (resistance to) peer influence is at play with regards to the role of delinquent peers on own delinquency.

Time Spent with (Delinquent) Peers (TC3)

Because one of the main assumptions of the developmental taxonomy is that delinquency results from mimicking the behaviour of more adult-like delinquent peers, the primary basis for explaining adolescent abstention is limited access, exposure to, or influence from their peers. However, social control theory expects that strong social bonds will not only prevent adolescents from engaging in delinquency but also from associating with delinquent peers.

Indeed, abstaining and delinquent adolescents were extremely unlikely to report being best friends, and delinquent adolescents reported being best friends with other delinquent adolescents as well as with adolescents who experimented with delinquency (Chapter 4). Furthermore, consistent with previous research (e.g., Barnes, Beaver & Piquero, 2011; Brezina & Piquero, 2007; Chen & Adams, 2010; Johnson & Menard, 2012; Rulison, Kreager, Osgood, 2014) We did not find evidence suggesting that all abstaining adolescents are socially isolated or excluded from their peers. More specifically, we found that, on-average, abstainers reported spending time with their peers both after-school and on the weekends, though they reported spending less time with their peers compared to other adolescents (Chapter 4). And while they were extremely unlikely to report having the most delinquent adolescents as best friends, many adolescent abstainers had best friends who engaged in some delinquency (Chapter 4). Furthermore, abstainers did not report generally better nor worse quality best friendships compared to other adolescents: delinquency abstention was associated with lower perceived support but also with lower perceived conflict with best friends (Chapter 5). However, a subgroup of maladaptive abstainers was in the bottom 25% of popularity as reported by their childhood classroom peers (Chapter 6).

Therefore, although there are some differences in the peer context between abstaining and (more) delinquent adolescents, including a subgroup of abstainers being less well-liked in childhood, generally our results suggest that there is little premise to the notion that most adolescent abstainers are non-delinquent because they are socially isolated.

Further, based on the finding that a brief exposure to a previously unknown deviant peer had a causal influence on own delinquency (Chapter 3), it seems improbable that abstainers would not have had any exposure to deviancy whatsoever among their peers, at school, or in their other roles in the larger community. Relatedly, neither (the absence of) childhood school delinquency nor sibling delinquency predicted the distinction between abstainers and self-reported delinquents in adolescence (Chapter 6). These results indicate that research should pay attention to factors that differentiate abstainers from other adolescents, including differences in the peer context, while assuming at least some exposure to peer deviancy amongst all adolescents.

Personal Characteristics (TC3)

Furthermore, we also tested the developmental taxonomy hypothesis that personal characteristics would be related to differences in involvement in the (delinquent) peer context. In this dissertation, we found that abstainers had higher mean levels of social anxiety (Chapter 5; but not Chapter 4), and conscientiousness (Chapter 4) compared to all other adolescents. Furthermore, a subgroup of adaptive abstainers had higher peer-reported levels of honesty and higher self-reported levels of conformity in childhood (Chapter 6). These findings are consistent with previous research that found that abstainers tend to have high moral beliefs (Brezina & Piquero, 2007) or that delinquents tend to have delayed moral judgment development compared to non-delinquents (Stams et al., 2006). When linking these personal characteristics to involvement in the peer context, our results suggested that scoring high on conscientiousness and social anxiety was related to less time spent with peers, which was in turn related to delinquency abstention (Chapter 4).

Further, a subgroup of maladaptive abstainers also had poorer primary school achievement based on official school reports compared to self-reported delinquents (Chapter 6). Indeed, this finding may be in line with previous research suggesting that abstainers may possess neurocognitive impairments (Owens & Slocum, 2015). Further, this same subgroup of adolescents was rated as least popular in childhood. Therefore, while abstainers tend to possess positive personal characteristics (see also: Boutwell & Beaver, 2008; Brezina & Piquero, 2007) there may be a subset of children who are at-risk in other developmental domains (e.g., neuropsychological or neurocognitive impairments) that lead to poor school achievement, being unpopular, and later being non-delinquent (see also: Hendrix, 2016). Therefore, these results seem to suggest that abstainers are likely to report personal characteristics that influence their exposure to the peer context leading to delinquency abstention.

Structural Barriers (TC3)

We did not find that abstainers reported more structural barriers in the form of perceived parental control (Chapter 4) nor more parental supervision as indicated by both the enforcement of rules as well as the closeness of supervision (Chapter 6). However, poor parental supervision in childhood did predict convicted delinquents from self-reported delinquents in adolescence (Chapter 6). Instead the majority of direct and indirect predictors of abstention were individual characteristics of the child rather than structural barriers that could prevent abstainers from learning about delinquency.

Social Bonds and Abstention (TC3)

In this dissertation, consistent with previous research on abstention (e.g., Brezina & Piquero, 2007; Owens & Slocum, 2015) we found that adolescent abstainers reported stronger parental bonds compared to both experimenting and delinquent adolescents (e.g., mean level differences). Abstainers reported more perceived support from mothers (Chapter 4, Chapter 5) and less perceived conflict from both parents (Chapter 5) in adolescence compared to (more) delinquent adolescents. However, we did not find that abstainers reported more commitment to school compared to adolescents who engage in some delinquency (Chapter 4). Additionally, the delinquency versus abstainer status in adolescence was not directly related to parent or peer relationship quality in emerging adulthood. Instead, non-abstainers who were also low in social anxiety reported more perceived parental support compared to abstainers in emerging adulthood (Chapter 5). Further, neither school commitment nor perceived mother support were directly related to the peer context nor (in-)directly to abstention versus experimenting with delinquency when included in a mediation model that accounted for personal characteristics and structural barriers (Chapter 4).

Conclusion and Recommendations

While we found support for the hypothesis that adolescent delinquency is related to social maturity (i.e., delayed identity synthesis), the direction of effects more strongly suggests that delinquency leads to problems with identity formation and not vice-versa (Chapter 2). We also found support for the hypotheses that delinquent peers influence the amount of own delinquency amongst young people (Chapter 3). And while social anxiety is related to less time spent with peers, non-clinical levels of social anxiety seem to be more protective than harmful as they do not seem to reach levels that exclude or prevent adolescents from spending time with their peers (Chapter 4), nor that harm their relationship quality with parents (Chapter 5). Indeed, non-clinical levels of social anxiety reported by abstainers may be reflective of other factors related to prosociality such as strong adherence to moral and social norms, rather than the negative emotionality

often associated with problematic or clinical levels of anxiety and antisociality (Lahey & Waldman, 2003).

Further, while delinquency abstainers did report strong social bonds in the form of good relationships with their parents during adolescence, the mechanisms (if any) by which these parental bonds may be related to abstainers' ability to avoid the seemingly inevitable exposure to (at least some) delinquent peer influence during adolescence remain unclear. Future research could test these possibilities by expanding the conceptualization of social bonds from the attachment and commitment bonds primarily used in this dissertation to also further incorporate elements of involvement (e.g., time spent in conventional activities) or beliefs (e.g., conventional attitudes) that may be linked to the peer domain in adolescence.

Taken together, I suggest that these findings can best be interpreted as evidence that personal characteristics related to differences in the peer context may be the most important factors leading to delinquency abstention. However, most abstainers primarily have positive personal characteristics that may protect them from delinquent peer influence during adolescence rather than negative personal characteristics that exclude them from peer groups altogether. Indeed, the social nature of delinquency in adolescence and the relevance of characteristics and situational factors that lead to more or less susceptibility to the (delinquent) peer context should be a focus in future research. In particular, attention could be paid to individual characteristics that reflect personal or social maturity (e.g., conscientiousness, strong identity commitments), or that reflect the tendency to pay close attention or adhere to social norms (e.g., sub-clinical social anxiety, conformity, honesty) as these could well be the same characteristics related to this subgroup's success in adulthood (Chapter 6; see also: Moffitt et al., 2002). Additionally, future research should consider examining the factors that affect susceptibility or resistance to (deviant) peer influence using experimental designs.

Conceptual Hypotheses

In this dissertation, we examined explanatory hypotheses regarding delinquency (abstention) as well as the predominant conceptual differences between these two theories. These conceptual differences formed the basis of, what I consider to be, the importance of studying delinquency abstention (see: Introduction Table 1, TC4-TC6). The first conceptual difference concerned the underlying distribution of delinquency: Is adolescent delinquency best explained by discrete mechanisms leading to qualitatively different groups of adolescents (e.g., the developmental taxonomy) or is adolescent delinquency a continuous construct with the same mechanisms leading to different levels of (non-) delinquency (e.g., social control theory)? The second conceptual difference concerned the nature of delinquency (abstention): Are abstainers troubled youth who

possess factors such as anxiety that prevent them from participating in normative adolescent behaviour (e.g., developmental taxonomy)? Or are abstainers model teenagers who possess protective factors such as strong social bonds that aid in the avoidance of delinquency (e.g., social control theory)? Naturally, these two conceptual differences are intertwined: If delinquency is a continuous construct, then delinquency abstention should by definition be adaptive because serious delinquency is most certainly maladaptive.

The Distribution of Delinquency (TC4)

In Chapter 4 we found that the mechanisms leading to (abstention from) delinquency were similar across all three constructed adolescent groups. We also found differences in the peer context between the three groups: adolescents with delinquent best friends were more likely to be an experimenter instead of an abstainer, regardless of the time spent with peers whereas no such moderation was found in predicting (more) delinquency. However, this relation is probably a difference in degree rather than in kind. Having more close delinquent friends likely equates to more delinquent exposure regardless of time spent with peers in general.

Further evidence in (partial) support of the idea that the same mechanisms might be responsible for different levels of delinquency can be derived from the finding that the five childhood predictors of adolescent delinquency abstention may apply to two different groups of abstainers (Chapter 6). First, there was a group of adaptive abstainers who were predicted by the inverse risk factors for delinquency (e.g., honesty, family income, and conformity). These results are indicative of a continuous distribution of delinquency in which positive promotive factors predict abstention and negative risk factors predict serious delinquency, with most adolescents falling somewhere in between. However, the second group of maladaptive abstainers was a slightly smaller subgroup who were not predicted by the inverse of risk factors nor by discrete factors. Instead, this group shared two factors with convicted adolescents (e.g., low in popularity and poor school achievement; Chapter 6). While this maladaptive group and its predictors can be interpreted as evidence of a non-linear relationship between abstention and delinquency, it does not necessarily signify that there are different processes for different adolescents. Instead, it may simply indicate that some children are differentially exposed to more or less risk factors on the multiple pathways that could lead to delinquency over time.

The Nature of Delinquency (Abstention; TC5-TC6)

In this dissertation we did not find any evidence of minor delinquency as an adaptive response to the challenges of adolescence. Instead, minor delinquency predicted increased identity confusion, or in other words, delinquency hindered the development of one of the key tasks of adolescence (Chapter 2). Further, abstainers scored highly on

the positive personal characteristic of conscientiousness (Chapter 4) – a personality marker of maturity (Roberts & Mroczek, 2008), related to educational and occupational success (Judge, Higgins, Thoresen & Barrick; Poropat, 2009). And while abstainers do (in some cases; Chapter 5) appear to be more socially anxious than other adolescents, and social anxiety is related to less time spent with peers (Chapter 4), there is no evidence of social isolation or exclusion. Rather, non-clinical levels of social anxiety seem to be more protective than problematic. For example, during adolescence abstainers report having a best friend and spending time with their peers (Chapter 4) and good quality relationships with their parents. (Chapter 5).

Finally, perhaps the most convincing evidence we have regarding the nature of adolescent delinquency (abstention) results from the long-term outcomes of these adolescents (see also: Moffitt et al., 2002). Indeed, if minor delinquents do not differ from abstainers in any meaningful way in the long term than the issue of adaptive delinquency would be of less relevance¹. However, our results showed that the subgroup of adaptive abstainers was the most successful group in later adulthood. These adolescents reported the highest amount of satisfactory achievement of what we deemed to be the main developmental tasks in life (i.e., employment, accommodation, intimate relationships, and mental health) compared to all other adolescent groups (i.e., maladaptive abstainers, self-reported delinquents, and convicted delinquents) whom did not differ from each other. Further, convicted delinquents were the worst off in terms of later life self-reported delinquency and substance use, as well as having more official convictions compared to all three other adolescent groups.

Therefore, while experimenting with delinquency in adolescence may have few detrimental long-term consequences when compared to persistent serious delinquency, the results of this dissertation suggest that, for most adolescents, some delinquency is not more adaptive than delinquency abstention. Yes, this dissertation also provides new evidence in support of the notion of maladaptive abstainers: A clinically relevant subgroup that is not delinquent but likely has social or cognitive impairments or other psychosocial problems that negatively affect their well-being. However, I suggest that this discrepancy between subgroups of abstainers can be better addressed by avoiding labelling single behaviours (e.g., non-delinquency) as positive or negative in absolute terms without examining their context (e.g., due to possible impairment) and consequences rather than by questioning the nature of minor delinquency.

Conclusion and Recommendations

The possibility of two different groups of delinquency abstainers provides an interesting point of compatibility between the discrete and continuous notions of delinquency.

¹ to research focusing on healthy adolescent development, anyways.

While this finding can be interpreted as evidence in favour of group-based delinquency theory, it also partially supports more general theories of delinquency. However, it does not necessarily signify that there are different processes for different adolescents. Instead, as mentioned above, it may also be interpreted as further evidence that children are differentially exposed to more or less risk factors on the various pathways that could lead to delinquency over time. Therefore, paralleling the conclusion of Blokland and Nieuwbeerta (2005), who compared group-based versus general theories of crime with regards to serious and persistent offending, I suggest that looking at the non-delinquency end of the spectrum, the interplay between between-individual differences and outcomes is likely more complex than this group-based typology can currently account for. Indeed, much research concludes that there are between two and five different groups of delinquents across the life course (Jennings & Reingle, 2012) and this dissertation provides evidence of divisible within-group heterogeneity amongst abstainers as well (see also: Hendrix, 2016). Group-based or taxonomic classifications are useful to reduce complex data into easily classifiable, convenient subgroups (Brame, Paternoster & Piquero, 2012) and are a helpful tool to examine potentially important non-linear predictors of delinquency. However these findings beg the question: how many groups can a taxonomy incorporate without causing the theoretical, scientific, and clinical relevance of this classification system to reduce (Blokland, 2005)?

With this in mind, as well as the mixed findings from the explanatory hypotheses, I suggest that a possible alternative to looking for discrete mechanisms predicting discrete groups of adolescents could be placing more of a focus on risk, promotive, and protective factors with regards to both individual and environmental characteristics from multiple theoretical frameworks to examine the possibility of cumulative thresholds (Skardhamar, 2009). For example, convicted delinquents shared individual characteristics with maladaptive abstainers, but were also exposed to additional environmental risk factors. Therefore, it is possible that there are non-linear relations or discrete groups in the form of tipping points: a certain threshold of risk factors that lead to “discrete” types of adolescents (Skardhamar, 2009). Such an approach would also account for the finding that abstention and self-report delinquency are more difficult to predict from each other in terms of number of risk and promotive factors, when compared to self-reported and convicted delinquency. Perhaps these tipping points are a more viable avenue for explaining differential outcomes based on (shared) factors than the presumption of truly discrete mechanisms that separate adolescents into discrete groups that may or may not reflect reality. Finally, single factors as well as cumulative (domain) scales of risk and promotive factors (e.g., van der Laan et al., 2010) could be used in order to determine the predictive accuracy of these risk and promotive factors as well as to estimate the absolute number considered to be a “tipping point” in determining heuristically “discrete” group

membership (see also: Kjelsberg, 2002; Theobald & Farrington, 2012; Wong et al., 2013; Zara & Farrington, 2010).

Overall, our results do not clearly favour either general (e.g., continuous) or group-based (e.g., discrete) theories of delinquency development. Perhaps, instead of viewing these theoretical distinctions as incompatible explanatory differences in delinquency that require different modeling techniques, we should instead make use of the theoretical and analytical advantages of both possibilities in understanding heterogeneity in (delinquency) development. In doing so, we may be better able to address such findings as the fact that the majority of adolescent abstainers are likely to be well-adjusted adolescents, who possess positive characteristics (see also: Hendrix, 2016; Moffitt, 2002), and later turn into well-adjusted adults, while also preventing the small minority of maladaptive abstainers from slipping through the cracks unnoticed onto their divergent pathway into an adulthood characterized by relatively lower life success.

Practical Implications

Admittedly, due to the aims and nature of the research conducted in this dissertation much of its implications are geared towards advancing theory and research on adolescent delinquency (abstention). However, we are able to offer some practical implications as well. Consistent with much previous research (e.g., Pratt et al., 2010; Hoeben, Meldrum, Young, 2016) our results suggest that (time spent in) the peer context is an important predictor of adolescent delinquency (Chapter 4). Further, delinquent peers can have a causal influence on own deviancy via behavioural modeling and likely via additional mechanisms as well (Chapter 3).

However, given both the prevalence of adolescent delinquency as well as the brief exposure necessary to influence own delinquency (see also: Gallupe et al., 2016; Paternoster et al., 2013) it seems impractical to prevent exposure to any delinquency or deviant peers altogether. Instead, I suggest that promoting individual characteristics that are able to aid adolescents in resisting peer influence may prove to be more effective in reducing the effect of time spent socializing with (delinquent) peers on own delinquency. However, some personal characteristics addressed in this dissertation such as the personality trait of conscientiousness may be difficult to target. Additionally, others, such as promoting increased social anxiety may have unnecessary negative consequences. Furthermore, this research on personal characteristics (i.e. Chapter 4) focused on between-person differences in the relation between conscientiousness or social anxiety on (deviant) peer influence, therefore we should be cautious in our interpretations of their practical implications within-persons.

However, within-person increases of in-depth exploration, a component of identity synthesis that represents the extent to which adolescents actively explore their personal identity commitments, gather new information about them, and discuss their commitments with others such as friends, teachers, or parents – also predicted decreased delinquency (Chapter 2). Therefore, based on the nature of in-depth exploration of personal identity, and the fact that this finding was based on within-person analyses, we suggest that increasing adolescents' in-depth exploration may be a (more easily) targetable personal characteristic that could prove to be effective in preventing or reducing delinquency. To my knowledge, we were the first to find the developmental order of this relation, and there is no current knowledge on how in-depth exploration may relate to avoiding (deviant) peer influence. Consequently, I encourage future research to replicate and extend upon this finding to further investigate how in-depth exploration of identity commitments may prevent adolescent delinquency. This research would be informative for the practical implications of these findings, including the plausibility of interventions aimed to reduce minor delinquency by increasing in-depth exploration.

Considering the Conceptualization of Delinquency Abstinence

I also want to draw attention to the fact that in the small body of research that explicitly focuses on delinquency abstinence, there is still no clear or standardized definition of what is required to be classified as a delinquency abstainer. For instance, some researchers include items such as lying to your parents (e.g., Barnes et al., 2011; Piquero, Brezina, & Turner, 2005) in their measures of delinquency, whereas others exclude all status offenses and substance use (Johnson & Menard, 2012). Studies also differ in the number of years of non-delinquency required, even considering that adolescents can transition in and out of their abstainer status (e.g., Barnes et al., 2011). Further, studies differ on the number of acts that define an abstainer– while most consider “zeros across the board” (e.g., Brezina & Piquero, 2007; Chen & Adams, 2010), others define abstinence as less than two offenses but also include rule-breaking acts from childhood (e.g., Moffitt et al., 2002), whereas others exclude all acts prior to age 15 (e.g., Pulkkinen, Lyyra, & Kokko, 2009). Even within this dissertation, Chapter 4 requires “all zeros” on 32-items and Chapter 5 also requires “all zeros,” but the available measure included 16-items. Further, some studies measure abstinence using only conviction data (e.g., Jennings, Rocque, Hahn Fox, Piquero, & Farrington, 2016) resulting in 73% of the sample being classified as “abstainers”. However, I would argue that the use of (only) conviction data is not consistent with the conceptualization of adolescent delinquency abstainers as a minority group whose behaviour requires explanation.

Although these different classifications are often the result of standard practical constraints that also aid in the generalizability of research, it is nevertheless important to examine whether these different conceptualizations lead to different conclusions. Different conceptualizations certainly lead to discrepancies in the number of adolescent abstainers (e.g., often between 5 and 30%) and it is currently unknown as to whether they may also result in discrepancies in the predictors and processes involved in abstaining from different types of behaviours.

In my opinion, adolescent delinquency abstention is a theoretical concept that can and should be defined a priori depending on the research question at hand (and the data available). Nevertheless, I still propose that future research should empirically examine the effect (if any) of these different conceptualizations on conclusions. For instance, a prospective longitudinal study with self-report delinquency across the length of adolescence and distal post-adolescence outcomes could be used to conduct a study in which abstention is defined in various different ways (e.g., adolescent-only abstainers; life-time abstainers; self-report delinquency abstainers; substance use abstainers; abstention as less than a given number of self-report offenses versus abstention as exactly zero offenses and so forth). And, just as the meaningfulness of the distinction between abstention and (some) minor delinquency can best be determined by its ability to distinguish between developmental outcomes, the idea that crossing an invisible line from zero to one (or more) delinquent act(s) during adolescence is a more meaningful threshold than an alternative can be best determined by the relation of these alternative conceptualizations to later life outcomes. Conducting a study that examined the relative empirical flexibility of the theoretical conceptualization of abstention would greatly aid in the comparison and generalization of findings across different studies. Further, this type of study would contribute more broadly to understanding and advocating for the added value of researching non-delinquency in adolescence.

Limitations and Suggestions for Future Research

While this research is among the first to address the nature of minor delinquency in adolescence by focusing on adolescent delinquency abstention, the findings in this dissertation should be interpreted with the knowledge of the following limitations. First, although we used the developmental taxonomy and social control theory to guide this research on minor delinquency (abstention), we did not provide a direct test of all theoretically relevant hypotheses. For instance, while we examined forms of social and personal maturity (e.g., identity formation and conscientiousness) we did not examine biological maturity and therefore could not examine the maturity gap between social and

biological maturity as originally hypothesized by Moffitt (1993). Indeed, pubertal timing may impact not only the perception of the maturity gap, but also the type of friends adolescents have as well as their potential influence (Barnes et al., 2011; Caspi, Lynam, Moffitt, Silva, 1993; Piquero & Brezina, 2001). However, it has also been suggested that personal characteristics may be the most important hypothesis related to abstention (Moffitt, 1997), and these were well-considered within this dissertation. Similarly, we focused on the attachment and commitment aspects of social bonding from social control theory. However, this emphasis is consistent with research suggesting these social bonds are most often and more strongly related to delinquency (e.g., Costello & Vowell, 1999) as well as more recent life-course extensions of this theory (e.g., Sampson & Laub, 2003).

Second, and relatedly, when examining group-based delinquency we were not able to label the constructed groups as adolescence-limited or life-course-persistent. Indeed, much research examining the developmental taxonomy hypotheses of discrete groups are reluctant to use these labels without having addressed all proposed hypotheses from childhood to adulthood (Skardhamar, 2009) – a feat that requires much richness of data. Further, with the exception of the Cambridge Study in Delinquent Development sample (Chapter 6), this research was primarily conducted on samples in which we were unlikely to have included (a reasonable number of) high-rate or chronic offenders. However, the distinction between adolescent delinquency and more chronic delinquency has been well researched in more suitable data (see also: Blokland, 2005; van Domburgh et al., 2009; Farrington et al., 2013; Moffitt & Caspi, 2001). Certainly, our aim was to address the nature of adolescent minor delinquency from the other side of the spectrum by comparing them to non-delinquent or abstaining adolescents for which our data was well-suited.

Third, although we did not find any evidence of discrete predictors or mechanisms of adolescent abstention, we did not examine other plausible predictors that might have a greater likelihood of being discrete including biological factors such as the presence of a certain allele or biological sex (see also: Greenberg, 2016). For example, the absences of the DRD4 7-repeat and the DRD2 A1 risk alleles were associated with delinquency abstention in males but not in females (Boutwell & Beaver, 2008).

Fourth, none of the research in this dissertation directly addresses gender differences in delinquency abstention, and therefore gives us no indication of any specific predictors of abstention in adolescent females. While some previous research suggested that there are gender differences on factors related to abstention (e.g., Boutwell & Beaver, 2008), other research concluded that they do not significantly differ (Owens & Slocum, 2015). However, there do seem to be gender differences in risk thresholds for delinquency (e.g., Wong et al., 2013). Further, both of these delinquency theories suggest that differences between boys and girls should be quantitative rather than qualitative. Nevertheless, I think this is an important avenue to explore. In particular, it would be worthwhile to

investigate the possibility of a group of maladaptive female abstainers and, if plausible, to what extent their childhood predictors and adult outcomes may overlap with girls on more delinquent pathways.

Fifth, adolescence is a transitional period in which delinquency is highly prevalent. I have argued earlier in this discussion that examining the long-term (post-adolescence) consequences of adolescent delinquency (abstention) on developmental outcomes other than delinquency may prove to be the most informative way to examine the nature of adolescent minor delinquency (abstention). However, we were only able to do this in Chapter 5 and, more predominately, in Chapter 6. Therefore, I strongly encourage future research to examine the enduring consequences of adolescent minor delinquency compared to delinquency abstention with regards to general well-being in a multitude of domains later in life (see also: Moffitt et al., 2002).

Finally, we have suggested that factors related to time spent in the peer context as well as abstainers' personal characteristics that allow them to resist influence from the seemingly inevitable exposure to delinquent peers may be the most important factors distinguishing abstainers from minor delinquents. However, in the current dissertation we did not have detailed information on what the peer context consists of nor whether this time is supervised or structured (e.g., Hoeben et al., 2016; Hoeben & Weerman, 2016; Siennick & Osgood, 2012). Additionally, this more detailed information is needed to understand where differences in the peer context may lie, but also in which ways personal characteristics may affect these differences.

General Conclusion

Overall, the results of this dissertation suggest that while some delinquency is common in adolescence, the idea that some delinquency is adaptive may be unwarranted. Occasional minor delinquency in adolescence is certainly adaptive when solely compared to serious or persistent delinquency. And indeed, a smaller subgroup of adolescent abstainers is poorly adjusted and in need of both additional research and clinical attention. But to conclude that adolescent minor delinquency would not benefit from prevention would be to overlook the evidence that the majority of adolescent abstainers are well-adjusted adolescents who possess positive personal characteristics that protect them from delinquency in adolescence and that these adolescents go on to successfully achieve the main developmental tasks in life.

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Samenvatting

De meeste jongeren maken zich tijdens de adolescentiefase wel eens schuldig aan kleine overtredingen, zoals winkeldiefstal, vandalisme of illegaal middelengebruik. Hoewel dit soms wordt omschreven als adaptief gedrag dat hoort bij de adolescentiefase, vertoont 5 tot 15% van de adolescenten geen delinquent gedrag. Er is echter nog maar weinig bekend over deze groep jongeren. Het hoofddoel van dit proefschrift was om de onderliggende aard van delinquent gedrag tijdens de adolescentie te onderzoeken, waarbij geprobeerd is een onderscheid te maken tussen jongeren die zich schuldig maken aan delinquent gedrag en jongeren die zich juist geheel onthouden van dit gedrag. Twee theorieën over delinquent gedrag van adolescenten stonden centraal in ons onderzoek: De ontwikkelingstaxonomie van Moffit (1993) en Hirschi's (1969) sociale controletheorie. Deze twee theorieën veronderstellen dat enige mate van delinquent gedrag normatief is tijdens de adolescentie, waardoor juist de afwezigheid van dit gedrag verklaard zou moeten worden. Aan de ene kant stelt de ontwikkelingstaxonomie dat adolescenten die geen delinquent gedrag vertonen, specifieke en potentieel pathologische kenmerken hebben. Deze kenmerken beperken hun kansen om met hun (delinquente) leeftijdsgenoten in contact te komen, wat vervolgens voorkomt dat ze regels overtreden. Aan de andere kant wordt vanuit de sociale controletheorie gedacht dat de afwezigheid van delinquent gedrag teweeg wordt gebracht door positieve factoren die adolescenten helpen bij het vermijden van zowel delinquent gedrag als delinquente leeftijdsgenoten. Deze theoretische hypothesen hebben geleid tot vijf onderzoeksvragen over de aard van delinquent gedrag tijdens de adolescentie.

In hoofdstuk 2 hebben we onderzocht of identiteitsontwikkeling en delinquent gedrag aan elkaar gerelateerd zijn gedurende de adolescentie. Identiteitsvorming, wat o.a. bepaald wordt door het maken van commitments (verbintenissen aangaan door te kiezen voor een bepaalde manier waarop men leeft en zich gedraagt), werd hierbij gezien als een mogelijke indicator van sociale volwassenheid (d.w.z. ontwikkelingstaxonomie) of sociale binding (d.w.z. sociale controletheorie). De resultaten suggereren inderdaad dat delinquent gedrag gerelateerd is aan identiteitsontwikkeling tijdens de adolescentie, waarbij delinquent gedrag problemen in de identiteitsontwikkeling voorspelt. Deze bevinding sluit aan bij het idee dat delinquent gedrag van adolescenten een gebrek aan sociale relaties reflecteert, wat zou samenhangen met een onvermogen om sterke commitments te maken. Daarnaast voorspelde een toename in het exploreren van je commitments een vermindering in delinquent gedrag op individueel niveau één jaar later. Dit ondersteunt de gedachte dat een hoge mate van sociale volwassenheid adolescenten kan beschermen tegen delinquent gedrag. Kort samengevat wordt er aan de hand van de resultaten gesuggereerd dat de psychologische consequenties van delinquent gedrag eerder belemmerend dan ondersteunend lijken te zijn bij een succesvolle transitie van de adolescentie naar volwassenheid. Bovendien kan sociale volwassenheid jongeren voor toekomstige criminaliteit behoeden.

In hoofdstuk 3 onderzochten we middels een experiment of blootstelling aan regelovertreedende leeftijdsgenoten een causaal effect zou hebben op het regelovertrevend gedrag van adolescenten zelf. Vanuit de ontwikkelingstaxonomie wordt verondersteld dat de blootstelling aan regelovertreedende leeftijdsgenoten een model creëert waarin dit gedrag gekopieerd wordt door adolescenten die uit zichzelf geen regelbrekend gedrag zouden laten zien (d.w.z. invloed van leeftijdsgenoten). Daarentegen wordt vanuit de sociale controletheorie gesuggereerd dat adolescenten met zwakke sociale relaties en die uit zichzelf al eerder geneigd zijn om regels te overtreden, ook eerder regelbrekende leeftijdsgenoten opzoeken (d.w.z. selectie effecten). We vonden dat jongeren in een periode van 5 minuten, waarin zij de gelegenheid hadden om te frauderen en zo meer geld te verdienen, geneigd waren om vals te spelen als zij daarvoor 30 seconden blootgesteld waren aan een valsspelende (onbekende) leeftijdsgenoot. Door jongeren die niet werden blootgesteld aan een valsspelende leeftijdsgenoot werd ook enigszins valsgespeeld, maar de kans om zelf vals te spelen nam significant toe als deze blootstelling wel plaatsvond. Het lijkt er dus op dat regelovertreedende leeftijdsgenoten een causale invloed uitoefenen op het regelbrekend gedrag van jongeren. Dit suggereert dat, naast enige zelfselectie, ook de invloed van leeftijdsgenoten een rol speelt bij regelovertrevend gedrag van jongeren.

In hoofdstuk 4 hebben we factoren onderzocht die verband houden met de hoeveelheid tijd die jongeren doorbrengen met (delinquente) leeftijdsgenoten. Aan de ene kant zouden jongeren die zich afzijdig houden van delinquent gedrag uitgesloten kunnen worden van (delinquente) vriendengroepen vanwege persoonskenmerken of externe factoren, zoals ouderlijk toezicht. Aan de andere kant zouden adolescenten die sterke sociale relaties hebben met ouders of op school geen behoefte hebben om zich bezig te houden met regelovertreedende leeftijdsgenoten en delinquent gedrag. Uit deze studie kwam naar voren dat jongeren die hoog scoren op de persoonskenmerken sociale angst en zorgvuldigheid indirect een grotere kans hebben om zich te onthouden van delinquent gedrag, wat weer gerelateerd is aan het feit dat zij minder tijd doorbrengen met leeftijdsgenoten. Toch rapporteerden deze jongeren niet volledig sociaal geïsoleerd te zijn. Wel was het uiterst onwaarschijnlijk dat zij een delinquente beste vriend(in) hadden. Daarbij was zorgvuldigheid, een positief persoonskenmerk dat verband houdt met succes in verschillende domeinen, ook direct gerelateerd aan de afwezigheid van delinquent gedrag bij jongeren. Er bleken geen effecten van externe factoren of sociale banden op de afwezigheid van delinquent gedrag. De resultaten suggereren dat de jongeren die geen delinquent gedrag vertonen bepaalde persoonskenmerken kunnen hebben die hen niet zozeer uitsluiten van sociaal contact, maar eerder ondersteunend zijn bij het vermijden van (regelovertreedende) leeftijdsgenoten en delinquent gedrag.

In hoofdstuk 5 hebben we onderzocht of jongeren die helemaal geen delinquent gedrag vertonen (sociaal) angstiger zijn dan hun leeftijdsgenoten die dit gedrag wel

laten zien. Ook hebben we gekeken naar hoe dit zich verhoudt tot hun relaties met ouders en vrienden. Een van de persoonskenmerken die jongeren de toegang tot contact met delinquente leeftijdsgenoten zou beperken is angst. Echter, (sociale) angst is ook gerelateerd aan een verminderde relatiekwaliteit met ouders en vrienden. Dit staat haaks op het idee dat jongeren die geen delinquentie plegen tot deze groep behoren vanwege positieve factoren zoals een goede band met hun ouders. De resultaten van dit hoofdstuk lieten zien dat jongeren die delinquent gedrag vermeden meer sociale angst rapporteerden tijdens de adolescentie dan regelovertredende jongeren. Hoewel sociale angst negatief gerelateerd was aan ervaren steun en positief gerelateerd was aan ervaren conflicten van jongeren, rapporteerden jongeren die zich onthouden van delinquent gedrag meer steun van moeder en minder conflicten met moeder, vader en beste vriend tijdens de adolescentie. Verder werd sociale angst geassocieerd met minder steun van moeder, vader en beste vriend vijf jaar later in de jongvolwassenheid, maar alleen voor jongeren die consistent delinquent gedrag lieten zien. Sociale angst van jongeren die geen delinquent gedrag vertonen was niet gerelateerd aan enige vorm van relatiekwaliteit vijf jaar later. Deze resultaten suggereren dat sociale angst inderdaad een beschermende rol kan spelen in het zich onttrekken van delinquent gedrag in de adolescentie. Omdat deze jongeren zich wellicht volwassener gedragen, zouden zij echter andere verwachtingen kunnen hebben ten aanzien van ervaren relatiekwaliteit op een latere leeftijd.

In hoofdstuk 6 hebben we jongeren die geen delinquent gedrag laten zien, jongeren die zelf delinquent gedrag rapporteren en jongeren die daadwerkelijk veroordeeld zijn vergeleken aan de hand van mogelijke voorspellers in de kindertijd. Er werden vijf voorspellers gevonden die de differentiatie tussen afwezigheid van delinquent gedrag en zelfrapportage van delinquent gedrag verklaren. Daarbij bleken drie kenmerken de jongeren die geen delinquent gedrag vertonen van veroordeelde jongeren te kunnen onderscheiden. Zo scoorden het eerste type jongeren hoog op eerlijkheid, conformiteit en gezinsinkomen, terwijl veroordeelde jongeren laag scoorden op alle drie de kenmerken. Geheel tegen de verwachting in deelden de twee groepen jongeren een aantal kenmerken uit de kindertijd, namelijk onpopulariteit en slechte schoolprestaties. Bovendien konden er twee verschillende typen worden onderscheiden binnen de groep jongeren die zich geheel onthouden van delinquent gedrag: Een “adaptieve” groep, die gekarakteriseerd wordt door hoge mate van eerlijkheid, en een “maladaptieve” groep, die gekenmerkt wordt door onpopulariteit en slechte schoolprestaties. Wanneer jongeren vervolgens op 48-jarige leeftijd werden vergeleken, hadden de adaptieve onthouders meer succes in de belangrijkste ontwikkelingsstaken in het leven (d.w.z. werk, huisvesting, intieme relaties en mentale gezondheid) vergeleken met alle andere jongeren. Daarentegen waren de maladaptieve onthouders op 48-jarige leeftijd alleen beter af dan delinquente jongeren wat betreft middelengebruik en delinquentie. Deze resultaten suggereren dat de

kwestie rondom de concurrerende theorieën over de functie van delinquent gedrag van adolescenten (d.w.z. ondersteunend versus belemmerend) wellicht opgelost kan worden door het onderscheiden van twee typen jongeren die zich onthouden van delinquent gedrag.

Kortom, de resultaten van dit proefschrift bevestigen dat de meeste jongeren zich in ieder geval schuldig maken aan één kleine overtreding tijdens de adolescentie (tussen 78 - 90%, hoofdstukken 4, 5 en 6). Bovendien liet 28% van de jongeren frauduleus gedrag zien wanneer zij hier een periode van 5 minuten de gelegenheid voor hadden (hoofdstuk 3). Echter, er wordt ook gesuggereerd dat ondanks delinquent gedrag veel voorkomt, het ongegrond is om aan te nemen dat zulk gedrag ook adaptief is voor adolescenten. Uiteraard is het af en toe begaan van een kleine overtreding adaptief wanneer het enkel wordt vergeleken met ernstige en aanhoudende delinquentie. Van de jongeren die zich geheel onthouden van delinquent gedrag laat bovendien een kleinere proportie uiteindelijk ontwikkelingsproblemen zien en voor hen is aanvullend onderzoek en aandacht vanuit de klinische praktijk nodig. De conclusie dat mild delinquent gedrag gunstiger zou zijn dan het zich geheel onthouden van delinquent gedrag zou echter te kort door de bocht zijn. Dit proefschrift liet zien dat de meerderheid van de jongeren die helemaal geen delinquent gedrag vertonen, goed aangepaste adolescenten zijn die beschikken over positieve persoonskenmerken die hen behoeden voor delinquent gedrag. Deze adolescenten groeien op tot stabiele volwassenen die de belangrijkste ontwikkelingstaken in het leven met succes volbrengen.

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About the Author

Natalie Mercer (1985) grew up in Victoria, Canada where she completed high school in 2002. That same year she moved to Wolfville, Canada to attend Acadia University. She graduated in 2006 with a Bachelor of Science with Honours in Psychology. In 2009, she moved to the Netherlands to attend the University of Amsterdam, where she obtained her Research Master of Science in Psychology in 2011 (cum laude). From 2011-2012, she worked as a junior researcher in the department of Criminology at the VU University Amsterdam. In September 2012, she began her PhD research on adolescent delinquency in the department of Youth and Family at Utrecht University.