Does Parental Knowledge Actually Matter?
An investigation of the link between perceived parental knowledge and antisocial behavior.

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May 2014
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2014

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Acknowledgements

It is not hard to see that science in the 21st century is not and should not be a solitary activity. While this claim is probably doubly true for the physical sciences I have little doubt that the same holds true for psychology as well. In line with this claim it is apparent to me that I owe a lot of gratitude to a lot of people that have made the following thesis possible.

First and foremost I owe a lot of gratitude to my main supervisor Evalill Karevold and secondary supervisor Pål Ulleberg. While the idea for the thesis and the specific hypotheses were developed by me, they have both been invaluable in their own way. Karevold by forcing me to clarify and fully develop my ideas and Ulleberg for giving guidance concerning the analysis. Further while all analysis and initial interpretations were done by me, both Karevold and Ulleberg have faithfully read over my work and given invaluable feedback and further suggestions. Secondly I need to acknowledge the entire TOPP team that have compiled the data this thesis is built on. Without their hard work this valuable data would not have existed, and thus not this thesis. Further I would also like to thank the University of Oslo for allowing me to participate in the SEM course at PhD level, giving me the opportunity to perform more advanced analysis in the thesis. Apart from my supervisors I would also like to acknowledge Aryan Aghdami and Madeleine Dalsklev for reading over my thesis and giving suggestions about language improvements.

On a more personal note I owe gratitude to my girlfriend Tone Andresen and my parents for their unwavering support.
Abstract: In the following study a normal Norwegian population sample (ages 12 to 16), was used to investigate the link between parental perceived knowledge (PPK) and antisocial behavior, in the adolescent years. The data from mothers’ reports were analyzed separately and together with adolescents’ reports to investigate whether parental perceived knowledge actually matters when it comes to the level of antisocial behavior. The data was analyzed using both combined scores and latent factors in Structural equation models (SEM). The results indicate that PPK is a separate predictor of antisocial behavior, but only when it comes to delinquent acts, not aggressive acts. There was only weak evidence indicating that there is an interplay between PPK and adolescent perceived parental knowledge (APPK). The relationship between mothers and adolescents seemed to increase PPK, even when controlling for the adolescents’ perspective. Theoretical and practical implications are discussed.

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“When I asked Gayle, Mae’s mother, what the single hardest thing was for her about raising a teenager, she answered immediately: Not knowing, or not really knowing what they do” From an interview with the mother of a young adolescent (Senior, 2014, p. 217).

It is clear from the citation above that lack of knowledge is a big concern for this mother; a concern reported by many mothers in both clinical and non-clinical settings (Pickhardt, 2013; Senior, 2014). From a developmental perspective on adolescence, it is not hard to see why parental knowledge would be expected to be a concern, for both parents and adolescents alike. According to this perspective, it might be argued that one of the central purposes of adolescence is to gain some autonomy from the parents (Coleman, 2011). Autonomy seems to mean different things at different ages. In early childhood autonomy is about being able to do things oneself (Erikson, 1963), while autonomy for an adolescent is about running one’s own life, being able to do what one wants, when one wants, without anybody, especially not parents, deciding (Coleman, 2011; Pickhardt, 2013). Importantly, since parents usually still have some power over their adolescents, the battle over autonomy is preordained, at least in part, to be a battle over information. At least in the sense that what parents do not know, they cannot interfere with. Therefore, to some extent, a decrease in parental perceived knowledge must be seen as a natural progression in normal development towards adult autonomy (Hoeve, Dudas, Eichelsheim, Laan, Smeenk, & Gerris, 2009; Crouter & Head, 2002).

However, many researchers have pointed out the risks of adolescents gaining too much autonomy too soon (Dishiona, Nelsona, & Bullockb, 2004; Tomasik, Rainer, & Silbereisen, 2008). Supporting this idea, there is a large body of research indicating that parental knowledge, or at least parental perceived knowledge, is a strong predictor for healthy adolescent development. More precisely, parental perceived knowledge has wide support as being one of the strongest and most reliable parenting predictors of antisocial behavior (Hoeve, Dudas, Eichelsheim, Laan, Smeenk, & Gerris, 2009; Crouter, & Head, 2002). The link between Parental perceived knowledge and antisocial behavior has been replicated in many different populations. The finding has for example been replicated with different minority groups, e.g., Chinese, African American, Hispanics and immigrants from the former Russian union (Bowman, Prelow & Weaver, 2007; Caldwell, Beutler, Ross, & Silver, 2006; Wang, Kim Anderson, Chen, & Yan, 2012; Titzmann, Silbereisen, & Mesch, 2013) and in different countries, such as Belgium, Canada, Germany, Israel, The United States and Sweden (Soenens, Vansteenkiste, Luyckx, & Goossens, 2006; Stattin & Kerr, 2000; Willoughby &
Hamza, 2011; Titzmann, Silbereisen, & Mesch, 2013). The link has also been documented with adolescents from different economical and educational backgrounds (Brendgen, Vitaro, Tremblay, & Lavoie, 2001), in families from varying degrees of population density (Griffin, Botvin, Scheier, Diaz, & Miller, 2000; Lippold, Greenberg, Grahm, & Feinberg, 2013), and by using both normal population samples and juvenile offenders (Williams & Steinberg, 2011).

However, as will be outlined in the next section, the scales used to measure Parental perceived knowledge, was until recently used to measure parental monitoring. A reconceptualization of the measure of parental monitoring was a consequence of the work of Stattin and Kerr (2000), which also added the claim that what parents know, comes from what the adolescents freely discloses and not any active effort on parts of the parents. This of course raises the question of whether parental perceived knowledge actually has an impact on adolescents’ antisocial behavior or is just spuriously associated. This is the question that lies at the heart of the current thesis.

**Monitoring and Parental Perceived Knowledge**

The literature on perceived knowledge/monitoring has a long, and more recently, a somewhat controversial history (Crouter & Head, 2002). Originally monitoring was defined as a set of correlated parenting behaviors involving attention to and tracking of the child’s whereabouts, activities, and adaptations” (Dishion & McMahon, 1998, p. 6). This definition highlights that monitoring is something the parent actively performs. However, traditionally monitoring has been operationalized by asking questions concerning whether parents believed they knew where their children were, what they did and with whom they were with. In other words, monitoring was measured by asking questions about parents’ perceived knowledge (Crouter & Head, 2002). If this perceived knowledge was shown to be a consequence of parental active efforts, this would be unproblematic, but more than a decade ago, Stattin and Kerr (2000) argued that parental perceived knowledge was more a product of youth willing disclosure, than any active effort on the part of the parents. In a more recent paper, Kerr, Stattin, and Burk (2010), showed that when their new operationalized measures of monitoring, where monitoring was divided into two subscales, one measuring solicitation of information and one measuring parental control, only youth disclosure showed a negative association with delinquency. This finding was also reported by Keijser, Branje, VanderValk, and Meeus (2010).
The first point raised by Stattin and Kerr (2000), that the old measure of parental monitoring is best reinterpreted as a measure of perceived knowledge, now seems to be more or less undisputed (Kerr, Stattin, & Burk 2010). More disputed is the claim that parental knowledge is more a product of youth willing disclosure, than parental effort, and what this redefinition might mean.

Commenting on the research by Stattin and Kerr and others, Soenens, Vansteenkiste, Luckc, and Goossens (2006) wrote “such findings may suggest that child effects (self-disclosure) are more important than parent effects (active monitoring) in explaining links between parenting and adolescent deviant behavior” (p. 305). In other words, the work of Stattin and Kerr (2000) might be seen as indicating that the parents are actually unimportant when it comes to the link between parental knowledge and antisocial behavior. To test if such a conclusion might have merit, Soenens et al., (2006) first investigated if parental responsiveness promoted self-disclosure. Secondly, a structural equation model (SEM) was constructed to see if responsiveness and behavioral control predicted parental knowledge, controlling for self-disclosure. Both approaches gave support to the hypothesis that parents did have an important impact. Both by promoting self-disclosure and that other parenting behavior actually led to some parental knowledge. In a similar vein, maternal warmth has been shown to promote more maternal knowledge (Fletcher, Steinberg, & Williams-Wheeler, 2004).

Further support for the idea that parental efforts have an impact on parental perceived knowledge comes from a very recent study (Lippold, Greenberg, Grahm, & Feinberg, 2013). In this study parental knowledge was conceptualized to mediate the association between youth disclosure and active parental effort on monitoring. The study showed, somewhat in contrast to previous studies (e.g., Keijsers, Branje, VanderValk, & Meeus, 2010; Kerr, Stattin, & Burk, 2010; Stattin & Kerr, 2000; Kerr &. Statin, 2000), that active parental effort was a larger predictor of parental perceived knowledge than adolescents willing disclosure.

It therefore seems to be some debate over where perceived parental knowledge comes from, which again has implication for how the link between parental knowledge and antisocial behavior can be viewed. Regarding the question of whether it is active effort that promotes parental knowledge, or adolescent self-disclosure, the evidence is clearly mixed. Some studies point towards adolescent self-disclosure as being the main and sometimes sole predictor (e.g., Keijsers, Branje, VanderValk, & Meeus, 2010; Soenens, Vansteenkiste, Luyckx, & Goossens, 2006; Stattin & Kerr, 2000) with one study actually showing evidence that active parental effort easily can backfire, leading to less parental knowledge (Hawk,
Keijzers, Frijns, Hale, Branje, & Meeus, 2013). Importantly in the study where the adolescent driven process was by far seen as the larger of the two, the parental driven process was still of important effect size (e.g., Soenens, Vansteenkiste, Luyckx, & Goossens, 2006). On the other hand, at least one study found parental effort to be a stronger predictor (e.g., Lippold, Greenberg, Grahm, & Feinberg, 2013).

On the question of whether mothers can promote self-disclosure through warmth and responsive behavior, there seems to be good support (e.g., Soenens, Vansteenkiste, Luckc, & Goossens, 2006; Fletcher, Steinberg, & Williams-Wheeler, 2004; Laird & Marrero, 2010). Importantly, even if allowing for the indirect effect of parental warmth, adolescents are still in the position of gatekeepers, a term coined by Hawk et al., (2013) to describe this type of relationship between parental knowledge and adolescent self-disclosure.

**Source Dependency of Perceived Knowledge**

In previous work on parental knowledge many researchers have seen the benefits of having both parents and adolescents rate the parents’ level of knowledge. The way former research has utilized the multi-informant data have, however, been questioned (Lippold, Greenberg, & Feinberg, 2011). That is, while some studies used both youth and parents reports, the measures were either examined in separate analyses (e.g., Soenens, Vansteenkiste, Luckc, & Goossens, 2006), used to create a single factor or, used in cross rater models (e.g., Kerr, Stattin, & Burk, 2010).

The choice of analytic strategy, in any given study, can be seen as a direct consequence of how the construct under consideration is viewed. While the measure of parental (perceived) knowledge is often seen as source dependent, the concept is seen as source independent. That is, while the source is seen as relevant, both questions addressed to the parents and to the adolescents themselves are seen as measuring the same thing. In other words, when adolescents answer questions of how much parents know, this is often seen as a measure of parental knowledge. When parents answer these questions, this is also often seen as a measure of how much parents know. In this view, when the answers do not match up, it can be concluded that one or both of the parties are mistaken in how much the parents actually know.

In this thesis another conceptualization is used, namely one where both parents’ and adolescents’ reports are seen as accurate indicators of how much they believe the parents know. This is a view that follows closely from the work of Lippold, Greenberg, and Feinberg (2011). In their view the adolescents’ perspective might be informing us about something
different from the parents’ perspective, and the interplay between the two might tell us something different. In short, parental perceived knowledge, seen from the adolescents’ perspective (hereafter referred to as adolescents’ perceived parental knowledge APPK) is seen as a separate construct from parental perceived knowledge (hereafter referred to as PPK). (Lippold, Greenberg, & Feinberg, 2011; Low Reyes, Goodman, Kliewer, & Red-Quinones, 2010).

APPK is a question of how much adolescents think their parents know about their activities, and as such, is the basis for their further actions. PPK is a measure of how much parents think they know about the adolescents activities, and as such, is the basis for their further actions. From this, it follows logically that APPK and PPK might have different antecedents and consequences and might interact to predict or explain even further variance.

From a purely theoretical standing this makes sense: what person A thinks person B knows about him is not indistinguishable from what person B thinks he knows about person A. This is particularly true when the people involved are in different power positions, as is the case in youth-parent relationships (Coleman, 2011; Laursen & Collins, 2009).

This becomes even more apparent when we consider a purely antagonistic relationship, like the one between the police and criminals. What the police think they know about the criminals is not the same thing as what the criminals believe the police know about them. If you heard that the criminals believed the police knew almost everything about their activities, you would expect them to be more cautious or possibly give up their criminal ways. If on the other hand the criminals believed the police knew nothing, you would expect them to be very bold. On the other hand if the police believed they knew everything they would be expected to be bold and confident, but if they believed they had little information they would be expected to be unconfident and probably try to obtain information. Beyond this, the interaction between the beliefs would also be interesting. This is not to say that one of the parties cannot be mistaken, but the belief themselves cannot be. A person can be wrong in thinking the earth is flat, but the belief itself cannot be wrong (see Crouter & Head, 2002; for further discussion). Stated differently; beliefs are cognitions that can be studied in their own right (Sigel & McGillicuddy-De-lisi, 2002).

On a more empirical note, the correlation between APPK and PPK ranges from moderate to low, supporting the idea that APPK and PPK is not the same construct (Crouter, & Head, 2002; Los Reyes, Goodman, Kliewer, & Quinones, 2010). An important point that should be mentioned is that while most studies write about parental reports, they mainly use
reports from the mother. The current study is regrettably no exception (see limitations in the discussion section).

**Reconceptualization of Parental Perceived Knowledge**

When a construct suddenly is reconceptualized it is necessary to examine the validity of the new construct. If the old measurement of monitoring is to be understood as a measure of APPK and PPK, a full theoretical analysis is needed to determine what this means. In other words, where do PPK and APPK fit into the larger picture of adolescent development, parenting and family systems?

To start with PPK, the first thing to note is that when the scale in question was seen as measuring parental active effort to obtain information (Dishion & McMahon, 1998), it fitted nicely with other parenting constructs like responsiveness, controlling parenting, and parental warmth (Baumrind, 1991; Barber, 2002). However, when the scale is reconceptualized as parental perceived knowledge, it is no longer clear that we are dealing with a parenting construct at all. When it comes to monitoring effort, a parent can largely choose how much time and energy to invest, and it is therefore to a large extent under the parent’s control. What information they feel they are getting, out of their effort, is clearly not under the same degree of parental control. To some extent, of course, all parental activity is interconnected with the child’s behavior, in so far as the two are participating in the same family system (Bronfenbrenner, 1979). Still, a separation can be made between constructs where one party affects the other’s actions and constructs where the very nature of the construct depends on an interaction. For example, while it is reasonable to conceive of parenting style as the former, it is harder to view attachment in the same manner. In the same vein, it is easy to see how actual monitoring efforts are in the first category, while parental perceived knowledge seems to fall in the second.

The discussion above is of course even truer for APPK. If parents are not fully in control of how much knowledge they feel they possess, they are clearly in even less direct control over how much their adolescents believe they know.

**The Construct of Antisocial Behavior**

Every study or paper in psychology needs to address how the different constructs under consideration are defined. This is probably doubly true for the study of antisocial behavior, because the general problem of people behaving disruptively have been studied
from so many different angles over such a long period (Farrington, 2007; Rutter, Giller, & Hagell, 1998). Antisocial behavior is here understood as “…behavior which is disruptive and harmful (or potentially so) to the function of a group or society” (Reber, Allen, & Reber, 2009, p. 48).

The above definition of course covers behavior that is, wholly or partially, covered by other definitions, which begs the question why antisocial behavior is the term chosen. The easiest definition of this sort of behavior is possibly crime (Rutter, Giller, & Hagell, 1998), or when talking about crimes committed by young people, it is often referred to as delinquency (Rutter, Giller, & Hagell, 1998). The problem with these definitions is that they exclude behavior that might be seen as relevant here (e.g., staying up past curfew, lying to parents) and some of the lines between what is seen as illegal is, from a psychological perspective, somewhat arbitrary (e.g., drinking becomes legal after 18).

On the other hand, we have diagnostic categories like conduct disorder, oppositional defiant disorder and antisocial personality disorder that cover much of the same ground as antisocial behavior (American Psychiatric Association, 2005). There are several reasons for why these clinical categories are not suitable for the current study. First and most importantly, the current study does not contain any actual clinical assessments for these disorders. Secondly; the definitions are too narrow for the current interest. Finally, there is a methodological problem concerning the limited range such disorders, by necessity, makes.

Beyond these approaches, outlined in the two previous paragraphs, we find many constructs that are similar to antisocial behavior (as defined here), e.g., externalizing behavior, disruptive behavior, and conduct problems (Kjeldsen, 2013; Rutter, Giller, & Hagell, 1998). When this paper proposes that antisocial behavior be used, this choice is to some extent arbitrary. The rationale for using antisocial behavior is much in line with Rutter’s argument that the term antisocial behavior seems to encompass all other relevant terms (Rutter, Giller, & Hagell, 1998). Antisocial behavior also captures the general nature of the problem, and is here used as the overarching construct.

A further distinction lies in the question of different subtypes of antisocial behavior. From the monitoring/PPK literature, the most common distinction is between aggressive and delinquent behavior (Griffin, Botvin, Scheier, Diaz, & Miller, 2000; Reitz, Prinzie, Dekovic, & Buist, 2007). Delinquency is operationalized by questions about stealing and similar law violations, and aggression is operationalized by questions concerning fighting and threats of violence (Reitz, Prinzie, Dekovic, & Buist, 2007). Importantly, both of these general categories have been further divided by others. Delinquency has for example been divided
into minor and major delinquency, where minor delinquency involves things like petty theft and major delinquency involves more serious acts like robbery (Titzmann, Silbereisen, & Mesch, 2013). Aggression has been divided into reactive and proactive aggression. Reactive aggression refers to aggressive acts being caused by something in the immediate situation, and proactive aggression refer to aggressive acts committed without any provocation (Brendgen, Vitaro, & Tremblay, Lavoie, 2001).

**Theoretical Foundation**

Most papers in the monitoring literature pay little attention to theoretical foundations. This probably stems from the fact that the monitoring construct itself is well established and the connection to antisocial behavior often repeated. A closer look in the literature, however, points to some theories being used: Stage environment fit theory (Eccles, Midgley, Wigfield, & Buchanan., 1993), social control theory (Hirschi, 1969), coercive theory (Patterson, 1982; Crosswhite & Kerpelman, 2009), and Bronfenbrenner’s bioecological theory (Bronfenbrenner, 1979). In the current paper, the bioecological theory is in many respects the main theoretical foundation. The other theoretical perspective will, however, also be discussed.

**Bioecological Theory**

Bronfenbrenner’s bioecological theory is a fairly large and complex theoretical framework, as much meta theory as theory (Bronfenbrenner, 1979; Lerner, Lewin-Bizan & Warren, 2011). The following overview does not do full justice to the complete theory and readers are encouraged to look up the original material for further illumination. The most current version of the bioecological theory has four interrelated components: the individual, the context, the developmental process and history/time (Bronfenbrenner, 1979, 2005; Lerner, Lewin-Bizan, & Warren, 2011). At the center of the bioecological theory lays the individual with his/her cognitive, emotional and biological characteristics.

The ecological in bioecological, comes from the fact that the context is divided into four nested layers: the microsystem (the immediate developmental system), the mesosystem (the system connecting between different microsystems), the exosystem (systems that have indirect effect on the child through other systems) the macrosystem (the superordinate system comprising the societal institutions and culture at large). The different systems and the individual are not construed as isolated parts, but rather as an organic whole with each level
influencing the others through the developmental process. The last component of the model, the chronosystem, incorporates time into the model (Bronfenbrenner, 2005).

In the monitoring/PPK literature, bioecological theory has been used to conceptualize how different individual characteristics interplay with the PPK, and to draw in further contextual factors (Jacobson & Crockett, 2000).

The purpose of adding the bioecological perspective in the current paper is not, however, to expand the scope beyond the microsystem, but to use important insights the theory has to offer concerning the dyadic interplay between mother and adolescents (i.e. within the microsystem). A dyad in this perspective can be defined as relation going in both directions, where a “relation obtains whenever one person in a setting pays attention to or participates in the activities of another” (Bronfenbrenner, 1979, p. 56). Importantly Bronfenbrenner stipulated the existence of more than one type of dyad: the first type of dyad is called an observational dyad. In this type of dyad one person pays attention to the other’s actions and the second person at least recognizes that the first person is paying attention. The second type of dyad is called a joint activity dyad, and as the name implies, involves two people working together on a joint activity. The last dyad is called a primary dyad. At this stage the dyad continues to play an influence, even in the absence of the other person. Importantly the properties of the dyads are not mutually exclusive, so a primary dyad can have one sided attention.

Two additional notes on bioecological dyadic perspective should be mentioned. Firstly, the balance of power in the dyad is seen as an important aspect, and it is stipulated that a gradual transformation of power to the weakest part is an important part of healthy development. Secondly, the dyads are seen as sources of strong affectionate relations. The affection needs not be mutually positive, but can be mutually negative, ambivalent and asymmetrical (i.e., not mutual) (Bronfenbrenner, 1979, 2005).

**Stage Environment Fit Theory**

Stage environment fit theory argues that the behavioral decline, often seen in adolescence, can partly be explained by a lack of fit between the environment and the individual. More precisely, environment fit theory hypothesizes that the transition from childhood to adolescents, with a special focus on school transfer, parent-child relationship and puberty, leaves many adolescents in an environment that does not meet their psychological needs (Eccles, et al. 1993). In a monitoring/PPK setting this theory has been used to explain the dynamic interplay between parental monitoring/knowledge and the parent-child
relationship (Wang, Dishion, Stormshak, & Willett, 2011). The changes accompanying adolescents is thought to make some adolescents strive for more autonomy than they actually need. Accordingly, if parents give in to this pressure for premature autonomy, a mismatch between the environment and the actual needs of the adolescent may follow (Haase, Tomasik, Rainer, & Silbereisen, 2008).

**Social Control Theory**

Social control theory is a specific case of the wider family of control theories. Control theories have as their starting points that all humans need to be held in check to avoid criminal acts. In other words, from a control theory standpoint the question is not why adolescents commit delinquent acts, but why they are usually constrained (Shoemaker, 2010). Building on this first notion it follows that when delinquent acts do occur, it is reasonable to view them as signs of a malfunctioning control system. What distinguishes social control theory from other control theories is the type of control system postulated. In social control theory the bonds to social institutions are seen as this control system, and in the present paper it is the family that is the institution of note. The theory thus puts forward a chain of events: first, a faulty or weakened institution such as parenting acts on the individual. This leads to a weakened, faulty or mis-socialization. Subsequently, this lack of proper socialization leads to a lack of attachment to the social institution in question. Lastly, this leads to delinquency (Shoemaker, 2010).

In a monitoring/PPK perspective, social control theory has been used to explain how social bonds can act as a moderator or mediator for monitoring/PPK on delinquency. It has also been used to address the influence of peers (Keijsers, Loeber, Branje, & Meeus, 2011; Shoemaker, 2010).

**Coercion Theory**

Coercion theory stipulates that coercive acts in a parent-child relationship can lead to a positive feedback loop, which further escalates the tension on the relationship. The strain on the parents in the end leads them to disengage from the relationship and thus stop discipline altogether. The lack of further discipline efforts on the part of the parents then leads to further delinquency on the part of the adolescents (Patterson, 1982; Crosswhite & Kerpelman, 2009).

In the monitoring/PPK literature, coercion theory has been used to hypothesize and explain bidirectional effects between delinquent/antisocial acts and parental knowledge (Crosswhite & Kerpelman, 2009). More precisely it is hypothesized that a coercive feedback
loop started by adolescents’ antisocial acts, lead parents to disengage and therefore collect less knowledge about their children (Crosswhite & Kerpelman, 2009; Keijsers, Branje, Vandervalk, & Meeus, 2010).

This Study

The purpose of the present study was to investigate whether parental perceived knowledge actually matters when it comes to antisocial behavior. At first glance this seems like a straight forward question, but when it is operationalized it is easy to see that it contains many sub-questions that need to be addressed more or less separately.

Preliminary Question One: Is it Reasonable to Conceptualize the TOPP Scale of Antisocial behavior as a Single Construct?

This question does not refer to the main question asked in this study, but needs to be addressed before the question of different impact on different sub-dimensions can be addressed. As have been discussed under the heading of antisocial behavior, different studies have used different subtypes of antisocial behavior. In the present study the TOPP (The Tracking Opportunities and Problems study) scale of antisocial behavior (TSAB) was used. As will be discussed in the method section there is some doubt as to which subscales can be derived from the TSAB (see method section), therefore a factor analytic approach is taken.

Preliminary Question Two: Does Parental Knowledge Have a Different Impact Depending on Type of Antisocial Behavior?

Since the specific sub-dimensions were not known before the analysis began, it is hard to stipulate specific hypotheses. This question will thus also be addressed in an exploratory manor, by running separate models for the different sub-dimensions that emerge from the factor analysis. What can be stated is that when using the aggression/delinquency divide, Griffin, Botvin, Scheier, Diaz, and Miller (2000) found more consistent effects of adolescent perceived maternal knowledge on delinquency then on aggression. In a more recent study Reitz, Prinzie, Dekovic and Buist (2007) also found that parental knowledge had a slightly stronger impact on delinquency than on aggressive behavior. Given the important implications and possible pitfalls of not addressing different subtypes of antisocial behavior, this is an area deserving more attention.
Main Question One: Can Perceived Parental Knowledge Predict the Amount of Antisocial Behavior when Controlling for Adolescent Perceived Parental Knowledge?

When it comes to parental effect, on adolescents’ antisocial behavior, it is natural to see parental knowledge as a prerequisite for parental impact. This follows from the idea that it is hard for parents to deal effectively with antisocial behavior they do not know about (Tilton-Weaver, 2013). If adolescents are the gatekeepers of parental knowledge (Hawk et al., 2013) one would expect that it actually was the APPK that predicted the later level of antisocial behavior.

Importantly, the early distinction between adolescents disclosing or not disclosing leaves out important distinction between different ways adolescents try to manage the information their parents receive (Laird & Marrero, 2010; Smetana, Villalobos, Tasopoulos-Chan, Gettman, & Champione-Barr, 2009; Darling, Cumsille, Caldwell, & Dowdy, 2006). At least three different strategies have been seen in the literature: avoiding topics, leaving out important details and lying. Importantly when it comes to antisocial behavior it is concealing, through lying and deception, which have the most consistent association with antisocial behavior (Laird & Marrero, 2010).

It does not follow from the adolescents as gatekeepers hypotheses that there should be high levels of agreement between PPK and APPK. If an adolescent tells his/her mother what they were doing last night, but kept out important details, the mother might feel well-informed, while the adolescent know that she really does not know that much. It does however follow from the adolescents as gatekeeper hypothesis that it is the APPK that is the accurate information and any deviation on the part of the mother signals her misconception. Following this same line of thought it should be the APPK that really predicts antisocial behavior. PPK should, on the other hand, only predict antisocial behavior to the extent that their view overlap with the true information they received from their children. If, in contrast, PPK contains something more than the true information the mothers received from their children, plus misinformation either deliberately given by children or crated by self-dilution, PPK should predict antisocial behavior beyond APPK. Interestingly, for the current purpose, it has been hypothesized that the lying strategy, used in a rule breaking situation, may be a special circumstance where parents often are well aware of the rule breaking (Laird & Marrero, 2010). If this claim has any merit and mothers act on the information to suppress further rule breaking, this would be a situation where PPK would separately predict declines in antisocial behavior.
An important question is that if PPK contains true information, which was not simply freely disclosed from the adolescent, where does it come from? One possibility is of course that parents see through their children’s deceptions (Laird & Marrero, 2010). Another possibility, not mutually exclusive, is that parents gain knowledge from hard-to-measure observations e.g., paying attention to posture and tone of voice (Crouter, & Head, 2002). Given that the current paper does not have any information about management strategies, parental unveiling of lies or parental attention to minor anomalies, this is of course speculations. The important point is that it is not farfetched to conceive of ways parents could get useful knowledge without their children being aware and therefore not farfetched to hypothesize that PPK might have separate impact on antisocial behavior.

**Main Question Two: Can Parental Perceived Knowledge Predict Antisocial Behavior When Controlling for the Stability of Antisocial Behavior?**

After the reinterpretation of parental monitoring into parental knowledge/perceived knowledge (Crouter and Head, 2002) the question of the direction of the effect became an even more important question than it had been in the past. In general there are three possibilities that have received attention: one, parental knowledge leads to less antisocial behavior, two, antisocial behavior leads to less parental knowledge, either directly or through a third variable, three, the effect is bidirectional. The most disruptive conclusion would be the second possibility; that antisocial behavior leads to less parental knowledge, since this would invalidate parental knowledge as a predictor. The general notion is that antisocial adolescents have more to hide and therefore strive to stricter manage the information their parents receive. A third variable possibility is that antisocial adolescents simply disclose less than less antisocial adolescents, leading to less actual parental knowledge (Lahey, VanHulle, D’Onofrio, Rodgers, & Waldman, 2008).

One possible way to try to tease apart the different possibilities is to control for past antisocial behavior when determining the link between parental knowledge and future antisocial behavior. If antisocial behavior predicts parental knowledge, either directly or through disclosure, adding it to the model would eliminate the effect. Following this logic, a fairly recent study found that the link between parental knowledge at 14 and delinquency at 16/17 remained significant, and of adequate effect size, when controlling for delinquency at age 14. The researchers also repeated the analysis with perceived knowledge and delinquent data from age 12. This second round of analysis gave the same result (Lahey, VanHulle, D’Onofrio, Rodgers, & Waldman, 2008). However, a later study also using individual data
did not find the same results (Low Reyes Goodman, Kliewer, & Red-Quinones, 2010). Importantly, while it holds true that the findings of Lahey, VanHulle, D’Onofrio, Rodgers, & Waldman (2008), indicate that the association is not spurious, the opposite does not hold true. If the effect is not significant after controlling for past/present antisocial behavior this might also indicate that parental knowledge leads to less antisocial behavior in the present and that the effect is stable. This of course is only a possibility if antisocial behavior at the earlier point predicts antisocial behavior later.

Since there are clear limitations of the method outlined above, a better way to pry apart the direction of the effect is to use multiple data waves, with both parental knowledge and antisocial behavior scales at each time point. Using such extensive data sets several researchers have tried to model the effect, all indicating that the effect is bidirectional (Kerr, Stattin, & Burk 2011; Willoughby & Hamza, 2011; Williams & Steinberg, 2011). The more precise hypothesis, that delinquency is bidirectionally connected to adolescent self-disclosure, has also been examined, with results indicating that the relationship is also bidirectional (Keijers, Branje, VenderValk, & Meeus, 2010). Overall the evidence seem to strongly indicate that the link between antisocial behavior, or at least delinquency, is bidirectional.

To some extent it might seem redundant to test for direction of the effect given the support for a bidirectional relationship. However, since this paper does not view maternal and adolescent reports as the same construct, it is of interest to view if the direction holds equally true for both PPK and APPK, especially when controlling for each other. Unfortunately, as will be discussed more fully in a later section, the dataset used in the present study does not allow for a full analysis of the direction of the effect. With only acceptable perceived knowledge data from one wave, a cross lagged or latent growth curve modeling is not feasible. The analysis will therefore be carried out by building on an autoregressive model with latent factors (see plan of analysis for more detail).

**Question Three: Is There Interplay Between Parental Perceived Knowledge and Adolescent Perceived Knowledge?**

Until now, this paper has to some extent treated adolescents and mothers as isolated units. From the bioecological theory that are here taken as a theoretical foundation, human development is more accurately depicted as an interaction within interconnected systems (Bronfenbrenner, 1979, 2005; Lerner, Lewin-Bizan, & Warren, 2011). Of these systems, the important one for the present purpose is the interconnected parts of the family system. If PPK and APPK are separate constructs, within this family system, it is therefore likely that they
have some kind of interplay\textsuperscript{1}. While the adolescents as gatekeeper hypothesis seems to generally favor an adolescent driven process, here the argument is that the process can best be described by a family driven process (Willoughby & Hamza, 2011). Importantly, while Willoughby and Hamza, (2011) based their argument on disclosure being predicted by other family factors (e.g., family time) this paper will partly look for evidence of a family driven process on grounds of the possible interactive nature of parental perceived knowledge.

From the literature, there are at least three possible ways to look at the interplay between parent and adolescent reports. One possible way to integrate parents and youth reports is by making a deviation score and viewing if this score predicts delinquent behavior. Following this approach Low Reyes, Goodman, Kliewer, and Red-Quinones (2010) found that when the mother reported higher monitoring (including parental knowledge) relative to the youth, higher self-reported delinquency followed two years later. This finding could not be attributed to prior delinquency, and was not found when using individual reports. Another approach was used by Lippold, Greenberg, and Feinberg, (2011), they divided the youth and mothers into either high parental knowledge or low parental knowledge, adding mothers and youths together in this fashion made four dyads (i.e., mother-high and youth-low, mother-high and youth-high, mother-low and youth-low, and mother-high and youth-high). They found that the mother-high, youth-high had the lowest level of delinquency, followed by the youth-high and mother-low, and lastly, the two remaining groups had no significant difference.

If parental knowledge is mainly a product of youth willing disclosure, and it is disclosure that drives the association between parental knowledge and delinquency, the findings should have looked very differently. This is known in the literature as a youth driven process, (Willoughby & Hamza, 2011). To start with discrepancies, it was when mothers believed that they had more information than the youths believed that more delinquency followed. If the connection was simply a result of a youth driven process, then the effect should have been seen for youth reports regardless of parental reports.

The same applies for the dyads: If the connection was a product of child disclosure then the youths’ opinions about the parents’ knowledge should be the guiding principle, regardless of mothers’ reports (Lippold, Greenberg, & Feinberg, 2011). On the other hand, viewing parental knowledge as a product of active parental efforts can also not explain this effect (Lippold, Greenberg, Grahm, & Feinberg, 2013). A problem with the dyadic approach is, however, the possibility that the effect seen is simply an additive one, where the main

\textsuperscript{1} The term interaction is usually used instead of interplay, even when the statistical meaning is not intended. Here interplay is used to avoid confusion with the interaction approach used later in the thesis.
effects of both PPK and APPK are simply aggregated. In other words the approach cannot be
directly interpreted as evidence of an interplay. Apart from this, the dichotomizing of the
perceived knowledge scales also loses a lot of the available information.

Apart from the two approaches taken in previous research (i.e. the dyadic and
discrepancy approach), it is also possible to look for an interplay between PPK and APPK,
using a classical interaction approach (see plan of analysis for more details). While all three
analyses were carried out, only the interaction and discrepancy approaches are reported in the
present paper (the analysis from the dyadic approach can be seen in the Appendix). This was
partly due to space limitations, but mainly due to misgivings about the validity of the dyadic
approach.

**Question Four: Does the Relationship Between Adolescents and Mothers Mediate the
Impact of Parental Perceived Knowledge?**

As was noted in the section concerning the theoretical underpinnings of parental
knowledge, all the relevant theories used in the literature to a greater or lesser extent mention
the relationship between parents and adolescents. It therefore seems that no full investigation
into parental knowledge can ignore the relationship between parents and adolescents.

On a more empirical note, in the section introducing parental perceived knowledge it
was shown that several researchers have found parental knowledge to be a mediator between
the quality of the parent-adolescent relationship and delinquency. The explanation of how
parental knowledge might be a mediator, claim that adolescents with a good relationship to
their parents disclose more (Soenens, Vansteenkiste, Luckc, & Goossens, 2006; Fletcher,
Steinberg, & Williams-Wheeler, 2004). As remarked, however, this still means that
adolescents are the gatekeepers and PPK might still be unimportant. If however PPK is seen
as a distinct construct with separate sources and effects, this explanation might not be the
whole picture. If a good relationship makes adolescents disclose more, it is also possible that
it makes mothers more atoned to their children’s moods, Dishonesty and so on. Importantly, if
this is the case, then PPK should mediate the effect of the mother-adolescent relationship,
even when controlling for the direct and indirect effect of APPK.

Beyond the direct theoretical importance, this would also give some indirect support to
the main question asked in this paper: does parental knowledge actually matter? If
circumstantial evidence indicates that PPK has a separate independent root to useful
knowledge, this would further support the notion that PPK is a factor in a larger family driven
process. Therefore, given the theoretical importance of relationships, the last analysis will be
carried out by constructing a SEM that looks for effects for both PPK and APPK simultaneously. Further, the investigation into the existence of a mediation effect is here taken as the second part of the argument towards viewing PPK/APPK as driven by or part of a family process.

**Method**

**Sampling and Participants**

The current study is based on questionnaire data from the Tracking Opportunities and Problems Study (TOPP). The TOPP study is an eight-wave longitudinal study taking place in Norway. It started in 1993 when the target children were 1.5 years old and continued to collect data approximately every two years until the children turned 18.5 years. In the first four waves (i.e., T1, T2, T3 and T4) only the mothers participated, but from T5, when the children had turned 12, they also participated (see table 1 for an overview). The current study used mothers’ and adolescents’ reports from T5, T6 and T7.

**Table 1**

*Overview of participant in the TOPP study*

<table>
<thead>
<tr>
<th>Data Wave</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
<th>T7</th>
<th>T8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children’s Age</td>
<td>1.5</td>
<td>2.5</td>
<td>4.5</td>
<td>8.5</td>
<td>12.5</td>
<td>14.5</td>
<td>16.5</td>
<td>18.5</td>
</tr>
<tr>
<td>N Reported by mothers</td>
<td>921</td>
<td>784</td>
<td>737</td>
<td>512</td>
<td>594</td>
<td>481</td>
<td>441</td>
<td>522</td>
</tr>
<tr>
<td></td>
<td>85%*a</td>
<td>85%</td>
<td>80%</td>
<td>56%</td>
<td>65%</td>
<td>52%</td>
<td>46%</td>
<td>57%</td>
</tr>
<tr>
<td>N Reported Adolescents</td>
<td>566</td>
<td>458</td>
<td>375</td>
<td>442</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>61%</td>
<td>50%</td>
<td>41%</td>
<td>48%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Based on Kjeldsen (2013)*

*a This number is based on the original 1081 mothers who were asked to participate. The further numbers are based on t1.*

The recruitment took place in six municipalities in eastern Norway. The participants were recruited by asking mothers who visited their local child health clinic if they would like to participate. More specifically, approaches took place when the mothers took their children in for the 18-month’s vaccination. In Norway, more than 95 percent of all mothers take their children to these clinics, making it an ideal place for recruitment (Kjeldsen, 2013).

At the relevant waves for this study (i.e., T5, T6 and T7) the data collection was carried out by mailing the questionnaires directly home to the participants. Importantly the adolescents and the mothers returned the questionnaires in separate envelopes. Written
information about the study were sent with each wave of data collection, informing the participant about the study, the voluntary nature of the study, and the right to not answer any part of the questionnaires.

The Data Inspectorate and the appropriate Regional committee for medical research ethics approved the project and all data was treated with care to make sure all participants remained anonymous.

In terms of social economic status (SES), the participants stemmed predominantly from the middle class, but with the relatively low differences in social class in Norway, this is viewed as representative for the majority of the population.Ethnically, the vast majority of the participating families were ethnically Norwegian, which is representative of families in 1993. However the social demographics have changed somewhat since 1993. In 1993 about 2.3 percent of the Norwegian population had a non-western background (as reported by Kjeldsen, 2013). In 2005, around the T5, the number of immigrants had risen to 8 percent in total, with 58 percent being from non-western backgrounds, adding up to a non-western population of 4.64 percent (Daugstad, 2006). In 2012 the number had reached 11 percent and the non-western population was 8.7 percent (Henriksen, Østby, & Ellingsen, 2010).

Considering that the TOPP sample is drawn from eastern Norway, the lack of a representative immigrant group is undesirable. For instance, in Oslo, the largest city in (eastern) Norway, the non-western immigrant population reached 16 percent in 2012 (Brunborg, 2013). Further, the immigrant population is thought to increase to about 20% by 2050 (Brunborg, 2013). Thus, the ethnic diversity seen in the TOPP study cannot be said to be fully representative for the ethnic diversity seen in Norway today, nor in the ethnic diversity expected in the near future.

In terms of gender at T5, T6 and T7, more girls answered the questionnaires than boys. This difference was more pronounced at T7 were 59 percent where girls and 41 boys. At the T6 and T5 approximately 55 percent were girls and 45 boys.

More diversity was seen in the mothers’ ages. At T1 the mothers’ ages ranged from 19 to 46 ($M=30, SD=4.7$). In terms of social environments, the local health clinics were placed so that they represented the environmental diversity seen in Norway (28% cities, 55% smaller towns or densely populated areas, and 17% in rural areas).

**Attrition analysis.** As mentioned, the present study is based on the data collected over many years by the TOPP research group. As such the attrition in the dataset has been analyzed substantially by others. Reviewing her own, as well as others, analysis Kjeldsen (2013) reported that of all variables analyzed only maternal education at T1 predicted further
dropouts by the mothers at T5 and T7. Turning to the adolescent’s attrition rates, of 18 possible variables at T1, only three predicted adolescent participation at T8² (female gender $OR = 1.9$, high maternal education $OR = 1.46$, and mothers temperament $OR = 1.23$) (Kjeldsen, 2013). Together past attrition analysis indicates that the TOPP data overall does not suffer extensively from attritional bias. It should however be noticed that all three of the factors, predicting dropout among adolescents, have in the past been seen as predictors of antisocial behavior (Rutter, Giller & Hagell 1998; Webster-Stratton & Reid, 2008). Further due to the specific nature of the present study, two additional logistic regression analyses were carried out; one testing if the degree of delinquency or aggression at T5 predicted dropout at T7 and another testing if APPK or PPK at T6 predicted dropout at T7. None of the variables were significant (see Table 5 in Appendix.)

**Instruments**

**TOPP Scale of Antisocial Behavior (TSAB).** Originally, the TSAB was created to mirror the findings of three different pathways hypothesized by Loeber (Loeber, Lacourse, & Homish, 2005). In this research, an authority avoidance, a covert pathway and an overt path was revealed (Loeber, Lacourse, & Homish, 2005). In Loebers research, the authority avoidance path starts with stubborn behavior before escalating to disobedience and later to truancy, running away and staying out late. The covert pathway started with minor acts such as lying and shoplifting before escalating to more serious acts like vandalism, fraud and, lastly, it escalated to major criminal acts such as auto theft and burglary. The overt path starts with minor aggression like bullying before escalating to actual fighting and lastly it can escalate to the most serious violent offenses such as rape, assault and even homicide. Previous work with the same material showed, through categorical confirmatory factor analysis conducted at T6, that a three-factor solution had an adequate fit (Kjeldsen, 2013; Loeber, Lacourse, & Homish, 2005).

The normal approach in such situation is to use the former work as a validation of the TSAB and thus use the same latent factors, but this is not done here for three reasons. First; while Kjeldsen (2013) used the TSAB from T5 and T6, the present study is based on T5 to T7. The complication lies in the fact that most of the authority avoidance questions have been removed from T7. This obviously making a three-factor solution impossible over all three

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² The current study does not use data from T8, but only up until T7. The analysis is therefore not directly applicable to this study. The analysis can never the less be informative about general trends in the TOPP data set.
waves. Secondly: the CFA was used only on T6, not T5 making it unknown if the same factor structure is seen at T5. Thirdly: the purpose of Kjeldsen’s (2013) study was to test for developmental pathways to externalizing behavior problems, making it natural to hypothesize the same structure that has been seen in prior such research (e.g., Loeber, Lacourse, & Homish, 2005). The present study on the other hand tries to argue for a specific relationship between PPK and antisocial behavior. In this case, a more viable approach to avoid measurement artifacts is to try for a factor structure/variable, more similar to that used in other studies looking at monitoring and antisocial behavior.

From the monitoring/PPK literature, three possible solutions present themselves. Major delinquency and minor delinquency, (Titzmann, Silbereisen, & Mesch, 2013,) aggression and delinquency (Griffin, Botvin, Scheier. Diaz, & Miller, 2000) and a single factor solution (Kerr, Stattin, & Burk, 2010).

The present study will take as its starting point the TSAB from T7 and work its way backwards to T5. Based on prior research, both based on the same and other data, a two factor solution is the most probable fit; one factor corresponding more to aggression or overt antisocial behavior, and one corresponding more to delinquency or covert antisocial behavior. The approach taken here is very similar to that used by Griffin, Botvin, Scheier, Diaz, and Miller, (2000). In their study an exploratory factor analysis was used on a general measure of antisocial behavior, revealing a two factor model. The factors were named aggression and delinquency. These two factors were then used separately in further analysis.

**Perceived knowledge.** Parental perceived knowledge and Adolescent perceived parental knowledge was assessed at T5 and T6. At T5 perceived parental knowledge was measured using a three point scale with four items. In the questionnaire to the mother the overarching question was “how much do you really know about …” followed by the four questions “where your child is in the evening, what they do in there spear time, where they are after school and who they are together with”. In the questionnaire to the adolescents, the question was “how much do your parents really know about” followed by the same four questions, but with the wording changed to fit the adolescents’ perspective (see Appendix C).

The four items used is very much in line with other instruments used in the parental knowledge literature, but usually a more extensive 6 item scale is used (Crouter and Head 2002). The measurement from the mothers’ perspective did not show enough variation to be

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3 At data collection all the questions were actually in Norwegian. This text and the following is my translation of the questions. The original questions can be seen in Appendix C
used in the study. More precisely of the 536 mothers who answered the perceived knowledge scale 454 answered the maximum on all questions, and 57 were almost at the same level. The questionnaire from the adolescents showed the same tendency, but had more variation. The adolescent scale had an acceptable alpha of .769.

At T6, a more traditional 6 item scale with four points was used (Gerris, et al., 1993). For the adolescents the overarching question was “how much do mom, dad or other adults living at home with you, really know about the things you do in your spare time?” This heading was followed by the six specific questions “do they know who your are together with, where you are in your spare time, what you do with your money, where you are immediately after school, were you spend your time on the weekends (day and night) and about problems you are having at school. This scale had a good reliability, with a Cronbach’s alpha of .855.

For the mothers the overarching question was “It can be difficult to monitor youth activities. These questions are about what you as a parent know about the things your child/adolescent does. Do you usually:” this was followed by the same six questions with the wording changed to be appropriate. The mothers scale also showed good reliability, with a Cronbach’s alpha of .849. Due to the problems with the perceived knowledge scales from T5, only the data from T6 was used as measures of PPK and APPK.

**Relationship.** The relationship with the mother was measured with adolescent report at T6. The instruments contained five items measured on a five-point scale. The overarching question was “think about your mother”, which was followed by the five specific questions: “I can trust that she helps me if I have problems, encourage me to always do my best, she encourages me to take my own decisions, she helps me with my school work if I don’t understand it, and when she wants me to do something she explains why”. The Cronbach’s alpha for the relationship instrument was .858.

**Plan of Analysis**

A number of preliminary analyses will first be conducted. This involves looking at the central tendencies, variance, skewedness and outliers/ influential cases. Few hypotheses are connected to this first preliminary step.

The second step of the preliminary analysis is to factor analyze the antisocial scale (TSAB). This is an important step that will have large implication for the further analysis. The factor analysis will start with the TSAB from T7 using exploratory factor analysis and strive to achieve a factor structure that might be repeated at T6 and T5. After the EFA, this first
wave of analysis will be used as grounds for further confirmatory factor analysis on the TSAB from T6 and T5. Lastly, a separate exploratory factor analysis will be conducted on the T7 TSAB that does not aim at being comparable to the TSAB at T6 and T5.

The main analysis will be conducted on a question-to-question basis starting with main question one. The analysis will to some extent be guided by the finding from the preliminary analysis. More precisely if different subtypes of antisocial behavior are found to be the best solution during factor analysis, this will be incorporated into the analysis.

The analysis of main question one will start out using multiple and simple regression analysis, before moving on to latent factor analysis with Mplus. Main question two will further build on the latent factor analysis, but will incorporate time into the analysis using an autoregressive model. Main question three will be addressed using two different approaches: a discrepancy approach and an interaction approach. The discrepancy approach will be based on a standardized deviation score and use a series of regression analysis. The interaction approach will incorporate an interaction term into the regression analysis and use R change scores, to determine the existence of an effect. The last question will be addressed by way of mediation analysis, using latent factor Structural Equation Models in Mplus.

**Results**

**Preliminary Question One: Is it Reasonable to Conceptualize the TSAB as a Single Construct?**

The following analyses were carried out with SPSS 21 and Mplus 6.1 (Muthen, & Muthen 2010). In all cases listwise deletion was used to deal with missing values.

**Methodological considerations.** Whenever a researcher needs to do any kind of cluster analysis, a basic question of whether to use confirmatory (CFA) or exploratory factor analysis (EFA), must always be addressed. The debate of the appropriate use of the techniques has at times been heated. Even 17 years ago it was remarked that the use of CFA was increasing at the expense of EFA (Hurley, Scandura, Schiriesheim, Brannick, Seers, Vandenberg & William, 1997). In General CFA is typically used whenever a theoretical model is tested and exploratory when there is no prior model. The claim that CFA is an appropriate analysis, whenever a theoretical model exists, is not without its critics. It has for instance been claimed that CFA is the appropriate method only when a measurement have been fully developed and validated (Byrne, 2010). At the same time EFA is by no means
totally without theoretical foundation, seeing as no researcher would think it meaningful to combine a random assortment of items and do an EFA.

The above discussion makes it an open question which approach is the most suitable for the TSAB. When it comes to the T6 assessment the previous work on the same data strongly suggest a CFA approach. When it comes to the shorter TSAB, used at T7, it is harder to argue that it is a fully validated instrument. Further, if Byrne (2010) claim should be taken seriously it might be a question if the use of the CFA was the right way to validate the T6 measure in the first place. Here the approach chosen is to start with an EFA on the shortened T7 TSAB and use the result as the basis for further CFAs. The T7 version is used as the starting point because it will most likely give the most restriction to the number of latent factors. Given the need for the same factors structure in each wave, it is argued that this is the ideal place to start.

**The factor structure of the TSAB T7.** The T7 TSAB comprises 12 items (see measurements for more information or see Appendix C). Three items were removed before the analysis; two for being conceptually different from the items in the TSAB used in T5 and T6 (i.e., I have drunk so much that I’ve felt clearly intoxicated, and Tried hashish or marijuana). One for nearly having zero variance (i.e., I have broken into a shop, house or apartment to steal something. \( M = .002, \) \( SD = .05 \)).

**Preliminary analysis concerning the use of an EFA.** An examination of the correlation matrix showed that all three assumptions regarding an EFA were met: One, there were a substantial number of correlations greater than +.3 (18/36). Two, there were no correlations greater than +.9. Three, all items correlated significantly and strongly with at least one other item (Ulleberg & Nordvik, 2000). Next, a KMO and Bartlett’s test was carried out to test the assumption of sampling adequacy and the assumption of sphericity respectively. The Bartlett’s test was significant (Chi-square \( df = 21, N = 361 \) = 576.5, \( p < .01 \)), showing that the assumption of sphericity was met. The KMO was at .783 witch indicates that the sample good, bordering on great (Field, 2009), and well clear of the conventional cutoff point of .6 (Ulleberg & Nordvik, 2000.).

The sample size was seen as adequate for an EFA. The exact number of participants needed is not a settled matter, but both in terms of relative number, based on the number of items (e.g., 15 per item = 135) and absolute terms 361 is adequate.
Main EFC. The analysis was carried out using maximum likelihood (ML). This approach was taken because it is a true factor analytic method (see Costello, & Osborne, 2005, for a discussion). Importantly, due to a high level of kurtosis the analysis was repeated using Principal Axis Factoring (PAF). This analysis gave the same factor structure as the analysis using ML.

During the first analysis it was discovered that two items had a strong cross loading. Particularly item 5 (i.e., I have on purpose destroyed or smashed windows, benches, mail boxes, garden plants or similar) had a relatively strong cross loading with a factor loading of .430 on factor one and .305 on factor two. Because of this, the item was removed and the analysis repeated. The factor structure remained the same in both analyses.

Based on Kaisers Criteria (i.e., eigenvalues greater than 1) two factors were extracted. A view of the scree plot and a parallel analysis also indicated a two factor solution. The two factors had a cumulative explained variance of 57.56%. From previous research it is hypothesized that the factors would correlate (Kjeldsen, 2013). Therefore, oblique rotation was selected. The items included in each factor are depicted in Table 2. Due to the items in each factor, factor one was named aggression and factor two was named delinquency.

Table 2

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor one</th>
<th>Factor two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitting, kicking</td>
<td>.803</td>
<td></td>
</tr>
<tr>
<td>Threatened to hit or damage,</td>
<td>.764</td>
<td></td>
</tr>
<tr>
<td>Been in a fight,</td>
<td>.623</td>
<td></td>
</tr>
<tr>
<td>Scratched or tugged,</td>
<td>.450</td>
<td></td>
</tr>
<tr>
<td>Shirk one or two class periods,</td>
<td></td>
<td>.683</td>
</tr>
<tr>
<td>Taking money from the family,</td>
<td></td>
<td>.610</td>
</tr>
<tr>
<td>Taken goods at the mall, etc.,</td>
<td></td>
<td>.507</td>
</tr>
<tr>
<td>Sneaked away from paying cinema el,</td>
<td></td>
<td>.412</td>
</tr>
</tbody>
</table>

Note. Factor loading under +/- .3 is removed from the table.

The analysis above depicts two deviations from the original research with the data. First, the item about vandalism was removed from the final solution, due to a relatively high cross loading. In the research by Kjeldsen (2013) and Loeber et al., (2005) this item was
expected to load on a factor including items about delinquent crime, but in the EFA it had its strongest factor loading on the aggressive factor. From a theoretical position, this is not so surprising seeing as violence often is defined as “actions that inflict, threaten, or cause injury. Actions may be corporal, written, or verbal. Injuries may be corporal, psychological, material, or social” (Jackman, 2002, p. 405,). In other words, material damage is often seen as a form of violence. In another study, for instance, using the aggression-delinquency distinction, a vandalism item was included in the aggression scale not the delinquent one (Finkenauer, Engels, & Baumeister, 2005). Secondly, the item concerning truancy was the item with the greatest factor loading on the delinquent factor. In previous research truancy has been depicted as loading on a third factor. The two scales had acceptable to good reliability with a Cronbachs alpha of .644 for delinquency and .772 for aggression.

**Confirmatory Factor Analysis**

Using the EFA as the theoretical model, CFA was conducted on all three waves starting with T7. The T5 and T6 correlation matrices were inspected in the same manner as the T7 matrix. Overall, factor analysis was seen as appropriate. The only concern was a small number of correlations above +.3 in the T5 matrix. One major problem with all the models depicted below was that extreme multivariate kurtosis was found in all the models. Due to this problem, the CFA and the following analysis were conducted using the MLM estimator in Mplus. This is because the MLM estimator controls for non-normality without demanding such an extensive sample as other estimators (e.g., ADF. Byrne, 2010, 2012)

The CFA model calculated to mirror the findings from the EFA at T7, showed a good fit (Chi-square (df = 19, N = 361) = 18.189, p = .051, CFI = 1.00, RMSEA < .001), indicating that the result of the EFA fit the data well.

In the CFA for T6 one additional item was added to the model (i.e., stolen things from someone’s pocket or purse, when the owner was not present). This was done to try and get the most variation out of the dataset, and was seen as admissible on the grounds of past research (Kjeldsen, 2013). The fit statistic for this model did however put the hypothesized model in some doubt (Chi-square (df = 26, N = 428) = 56.889, p < .001, CFI = .903, RMSEA = .052). That is all the fit indices indicated problems.

From the previous categorical CFA done on the same material (Kjeldsen, 2013), the most likely explanation is that the item concerning truancy is not a good fit with the other items. In previous work on the TSAB truancy was seen as an item on another factor. A new model was therefore fitted to the data removing this item. The new model showed a superior
fit (Chi-square ($df = 19, N = 428) = 29.502, p = .0585, CFI = .955, RMSEA = .035).
Comparing the Chi-squares also showed that the new model had a significantly better fit ($df = 26-19$) 7. Chi-square ($56.889 - 29.502) = 27.387, p < .01). The Cronbach’s alpha for the delinquency subscale was poor with a Cronbach’s alpha of .536. The reliability of the aggression scale was better, with an alpha of .735. It has however been argued that when Cronbach’s alpha is low (e.g., .5) and the number of items are small, the mean inter-item correlations is a better measure of reliability (Pallant, 2010). In this regard the delinquency scale fared better with a mean inter-item correlations of .263 (i.e., within the range of .2 to .4. see Pallant, 2010).

Going back to the T7, the model was refitted without the truancy item. This analysis showed that the new model had an equally good fit (Chi-square ($df = 13, N = 361) = 13.203, p = .828, CFI = 1.00, RMSEA < .001). A comparison of the models did not indicate that the new model was a significantly better fit ($df (19-13) = 6. Chi-square (18.189 - 13.203) = 4.986, p >.05). The alpha of .513 of the new T7 delinquency scale did however indicate some problems with reliability, but with a scale containing only three items this is to be expected. Further the mean inter item correlation was .293.

The question of whether truancy should be a part of the delinquency factor at the T7 is thus not a straight forward question. Conceptually speaking, there is a good reason to be skeptical about truancy being a part of a delinquency construct. Delinquency is often defined as acts that are illegal or at least acts that break a legal code (Rutter, Giller, & Hagell, 1998). For instance, a study dealing with the link between delinquency and truancy concluded that truancy often leads to delinquency, not that truancy is a part of delinquency (Garry, 1996). The last model, where truancy was deleted, was thus chosen at T7.

In the CFA for T5 yet one more item was added to the model (i.e., I have borrowed a bike or moped without permission). This was again done to try and get the most variation out of the dataset, and was also here seen as admissible on the grounds of past research (Kjeldsen, 2013). As in the final model at T6 and T7 truancy items were not included. The model showed a good fit (Chi-square ($df = 26, N = 520) = 34.202, p = .057, CFI = .957, RMSEA = .024). The Cronbach’s alpha for the delinquency subscale was unacceptable with a Cronbach’s alpha of .406. The reliability of the aggression scale was acceptable with an alpha of .689. The poor reliability estimate for the delinquency scale probably stems from the small number of items and small number of correlations between items, in this wave. This impression was further bolstered by the fact that the mean inter item correlation was also outside of the acceptable range (i.e., mean inter item correlation delinquency T5 = .110)
Lastly a CFA was tested to see if a one factor solution was possible. Testing a model with all items, that was included in the two previous factors at T7, did not show a good fit (Chi-square ($df = 14, N = 361$) = 28.989, $p = .011$, $CFI = .917$, $RMSEA = .061$). This scale had a Cronbach’s alpha at .85.

**T7 isolated EFA.** It was seen as acceptable to have different items on the different waves because past research clearly indicates that the new items on T6 and T5 belong on the same factor and therefore the latent factor has the same meaning. A problem with the above solution is that it leaves only three items on the delinquent scale at T7. This might be a problem both in terms of reliability, but also in that it might be seen as a bad use of variation in the dataset. A new EFA was therefore conducted to see if a different structure was possible, if T6 and T5 were not taken into consideration. The two item removed from the EFA for being conceptually different was therefore reentered (i.e., I have drunk so much that I’ve felt clearly intoxicated, and I have tried hashish or marijuana).

Again using Kaiser’s Criteria two factors was again extracted. The scree plot and a parallel analysis also indicated a two factor solution. The solution had a cumulative explained variance of 47.52%. The factor solution after rotation can be seen in Table 1 in the Appendix. The aggression subscale remained unchanged, but with somewhat lower loadings. The prior delinquent scale received the two new items. From the definition of delinquency outlined in the section on antisocial behavior this fits well seeing as both underage drinking and marijuana is illegal. To separate the two delinquency scales this second scale is hereafter referred to as the full delinquency scale. The new delinquency scale showed a Cronbach’s alpha of .622 and a mean inter item correlation of .258.

**Preliminary Descriptive Statistics**

General descriptive statistics for the delinquency scale are presented in Table 3. As can be seen overall, the means indicates that the adolescents in the sample committed relatively few antisocial acts. Of equal importance is the fact that there is a high degree of non-normality in the data. The high kurtosis stemmed from the large amount of adolescents committing few or no antisocial acts. Also importantly, when the scale at T7 is extended to include underage drinking and drug use the number of delinquent acts increases dramatically.

Turning to the parental knowledge scales it can be seen that mothers on average believed they had much knowledge about their adolescents’ daily activities at T6.
Interestingly however, adolescents at the same point in time on average credited their parents with much less knowledge. Both the PPK and APPK scales were normally distributed.

Table 3

Descriptive statistics for antisocial behavior T5, T6, T7, PPK and APPK scales

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Skew</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total antisocial behavior T5</td>
<td>1.20</td>
<td>.26</td>
<td>1.87</td>
<td>4.76</td>
</tr>
<tr>
<td>Total antisocial behavior T6</td>
<td>1.24</td>
<td>.35</td>
<td>2.65</td>
<td>10.24</td>
</tr>
<tr>
<td>Total antisocial behavior T7</td>
<td>1.34</td>
<td>.41</td>
<td>2.29</td>
<td>7.36</td>
</tr>
<tr>
<td>Aggression T5</td>
<td>1.47</td>
<td>.62</td>
<td>1.54</td>
<td>2.08</td>
</tr>
<tr>
<td>Aggression T6</td>
<td>1.29</td>
<td>.54</td>
<td>2.28</td>
<td>5.22</td>
</tr>
<tr>
<td>Aggression T7</td>
<td>1.19</td>
<td>.45</td>
<td>3.38</td>
<td>13.62</td>
</tr>
<tr>
<td>Delinquency T5</td>
<td>1.09</td>
<td>.69</td>
<td>10.33</td>
<td>14.24</td>
</tr>
<tr>
<td>Delinquency T6</td>
<td>1.38</td>
<td>.59</td>
<td>2.26</td>
<td>5.84</td>
</tr>
<tr>
<td>Delinquency T7</td>
<td>1.64</td>
<td>.72</td>
<td>1.49</td>
<td>2.45</td>
</tr>
<tr>
<td>Full delinquency T7</td>
<td>2.88</td>
<td>3.22</td>
<td>1.49</td>
<td>2.99</td>
</tr>
<tr>
<td>PPK T6</td>
<td>3.23</td>
<td>.43</td>
<td>-.20</td>
<td>.53</td>
</tr>
<tr>
<td>APPK T6</td>
<td>2.12</td>
<td>.59</td>
<td>-.35</td>
<td>-.40</td>
</tr>
</tbody>
</table>

Note. The range of the aggression and delinquency scales were one a scale from 1 to 5. The knowledge scales ranged from 0 to 3.

Main Question One: Can Parental Perceived Knowledge Predict the Amount of Antisocial Behavior When Controlling for Adolescent Perceived Parental Knowledge?

In the following regression analysis, composite scores were used. These composite scores were created by adding together the raw scores from the questions the CFA analysis indicated belonged together, and then dividing by the number of questions. The following models controlled for gender and maternal education, but none of these were significant, and were therefore dropped from the final models. Dropping the control variables did not change the results. In the first regression analysis the scores from the one item solution at T7 was used. Importantly, as indicated by the factor analysis this scale appears to contain more than one dimension. The results of this first regression analysis can be seen in Table 4.

As can be seen in the first model parental perceived knowledge was a significant predictor indicating that the more the mothers perceived to know, the less antisocial the adolescents where two years later. In the second model however when the APPK was
included as a predictor, only this was a significant predictor. In other words when controlling for the adolescents perspective parental perceived knowledge did no longer predict antisocial behavior two years later.

Table 4

Regression analysis for the full TSAB

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized b coefficient</th>
<th>Standard Error</th>
<th>Standardized Beta</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>intercept</td>
<td>1.876</td>
<td>.176</td>
<td>-.182</td>
<td>.000</td>
</tr>
<tr>
<td>PPK</td>
<td>-.171</td>
<td>.053</td>
<td>-.182</td>
<td>.002</td>
</tr>
<tr>
<td><strong>Model 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>intercept</td>
<td>.1.968</td>
<td>.171</td>
<td>-.077</td>
<td>.193</td>
</tr>
<tr>
<td>PPK</td>
<td>-.072</td>
<td>.055</td>
<td>-.077</td>
<td>.193</td>
</tr>
<tr>
<td>APPK</td>
<td>-.191</td>
<td>.0,39</td>
<td>-.291</td>
<td>.000</td>
</tr>
</tbody>
</table>

Note. R² in the model 1 was .026 and .106 for model 2

Next, the subscales for aggression were used as the outcome variable, while the predictors remained the same. As can be seen in top Table 5, even when just PPK was included, it was not significant. Adding APPK did not improve PPK, but was itself significant. This strongly indicates that only the adolescents’ perspective had any predictive power when it comes to aggression.

Lastly, the items from the delinquency subscale were used. The bottom of Table 5 shows the result of the regression analysis. In the first model when only PPK was included it was a significant predictor. More importantly when APPK was included, PPK was still a significant predictor with meaningful effect size ($b = -.228$, $beta = -.135$). This indicates that when it comes to delinquency, mothers’ perspective predicts delinquency beyond the adolescents’ perspective.
Table 5

Regression results from the aggression and delinquency subscales from T7

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized b coefficient</th>
<th>Standard Error</th>
<th>Standardized β coefficients</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 on Aggression</td>
<td>intercept</td>
<td>1.322</td>
<td>.182</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>PPK</td>
<td>-.045</td>
<td>.055</td>
<td>.415</td>
</tr>
<tr>
<td>Model 2 Aggression</td>
<td>intercept</td>
<td>1.376</td>
<td>.182</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>PPK</td>
<td>.004</td>
<td>.058</td>
<td>.943</td>
</tr>
<tr>
<td></td>
<td>APPK</td>
<td>-.099</td>
<td>.42</td>
<td>.018</td>
</tr>
<tr>
<td>Model 1 Delinquency</td>
<td>intercept</td>
<td>1.710</td>
<td>.310</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>PPK</td>
<td>-.365</td>
<td>.094</td>
<td>.000</td>
</tr>
<tr>
<td>Model 2 Delinquency</td>
<td>intercept</td>
<td>1.850</td>
<td>.305</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>PPK</td>
<td>-.228</td>
<td>.098</td>
<td>.021</td>
</tr>
<tr>
<td></td>
<td>APPK</td>
<td>-.272</td>
<td>.69</td>
<td>0.000</td>
</tr>
</tbody>
</table>

*Note. R² in the aggression models were = .049 and .112 respectively and .610 and .166 for the delinquency subscales respectively.*

**Latent Analysis**

The regressions depicted above were all preformed on raw composite scores. A critique of this approach is that it, alongside the true score, also contains a lot of error. This is particularly true when dealing with scores that have questionable reliability. When a CFA has been conducted, showing that not all items have a one to one relationship with the latent construct of interest, it is worth asking whether the relationship between the constructs hold true on a latent level. To accommodate this question, two SEM were created and estimated using the MLM estimator in Mplus. The first model used a single latent factor for all items in the two subscales. The second model used two latent factors based on the factor analysis. The items from the PPK and APPK were also modeled to two latent factors. In both models the latent perceived knowledge factors were regressed on the antisocial latent factors.

In the model with the single antisocial latent factor, the model fit was (Chi-square (df = 132, N = 361) = 210.983, p > .001, CFI = .940, RMSEA = .044). In the two factor model the fit was (Chi-square (df = 128, N = 361) = 173.740, p = .005, CFI = .966, RMSEA = .034). Although the Chi Square was significant in both models, the overall fit of the models was seen as adequate, at least in the two factor model. The result of the first model can be seen in the top of Table 6. As in the regression analysis, PPK was not a significant predictor of antisocial behavior when controlling for APPK.
The result of the second model can be seen in Table 6. Starting with the Aggression subscale it can be seen that with the adolescent perspective included in the model, PPK did not predict aggressive behavior two years later. Turning to the delinquency subscale the results of the SEM mirrors the findings from the regression analysis. Even with the adolescent perspective included in the model, PPK still significantly predicted delinquency two years later. In terms of effect sizes it appears that even though both PPK and APPK was significant, the APPK have the larger impact (PPK $\beta = -.200$, APPK $\beta = -.295$).

The analysis was also conducted using the full delinquency scale. This model also showed acceptable fit (Chi-square ($df = 204$, $N = 361$) = 219.218, $p = .035$, $CFI = .974$, $RMSEA = .026$). As can be seen in Table 7, the result remained the same with the full delinquency scale.

### Table 6

*Latent analysis for the combined antisocial scale, the delinquency scale and the aggression scale*

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized $b$ coefficient</th>
<th>Standard Error</th>
<th>Standardized $\beta$ coefficients</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined antisocial behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPK</td>
<td>-.184</td>
<td>.141</td>
<td>-.127</td>
<td>.193</td>
</tr>
<tr>
<td>APPK</td>
<td>-.332</td>
<td>.106</td>
<td>-.306</td>
<td>.002</td>
</tr>
<tr>
<td>Delinquency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPK</td>
<td>-.342</td>
<td>.166</td>
<td>-.200</td>
<td>.039</td>
</tr>
<tr>
<td>APPK</td>
<td>-.078</td>
<td>.031</td>
<td>-.208</td>
<td>.012</td>
</tr>
<tr>
<td>Aggression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPK</td>
<td>-.013</td>
<td>.037</td>
<td>-.025</td>
<td>.738</td>
</tr>
<tr>
<td>APPK</td>
<td>-.078</td>
<td>.031</td>
<td>-.206</td>
<td>.012</td>
</tr>
</tbody>
</table>

*Note.* $R^2$ for the full TSAB = 0.142, delinquency = .176 and aggression = .039

### Table 7

*Latent analysis with the full delinquency scale*

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized $b$ coefficient</th>
<th>Standard Error</th>
<th>Standardized $\beta$ coefficients</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Delinquency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPK</td>
<td>-.354</td>
<td>.138</td>
<td>-.208</td>
<td>.010</td>
</tr>
<tr>
<td>APPK</td>
<td>-.478</td>
<td>.118</td>
<td>-.371</td>
<td>.000</td>
</tr>
<tr>
<td>Aggression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPK</td>
<td>.013</td>
<td>.037</td>
<td>.025</td>
<td>.738</td>
</tr>
<tr>
<td>APPK</td>
<td>-.078</td>
<td>.031</td>
<td>-.206</td>
<td>.012</td>
</tr>
</tbody>
</table>

*Note.* $R^2$ for the full delinquency scale = .245, aggression = .039
Main Question Two: Can Perceived Parental Knowledge Predict Antisocial Behavior When Controlling for the Stability of Antisocial Behavior?

The first question in this regard is whether there is actually any significant stability in the delinquency subscales. The analysis began with fitting an autoregressive (AR) model with Mplus (see Biesanz, 2012, for a discussion of the approach). As was the case in the other analysis, using Mplus, MLM was used as the estimator of choice. The first model was constructed using the same factor structure as was found in the CFAs at the different waves.

The AR model for delinquency from T5 to T7 showed a questionable fit (Chi-square ($df = 128, N = 278$) = 220.193, $p < .001$, $CFI = .919$, $RMSEA = .033$). Nevertheless, the model indicated that there was significant stability from T6 to T7, but not from T5 to T6 (see Appendix Table 2). Due to the somewhat poor fit and questionable reliability of the T5 delinquency scale, another model was fitted to test the stability from T6 to T7. This second model showed excellent fit (Chi-square ($df = 21, N = 322$) = 114.216, $p < .001$, $CFI = 1.0$, $RMSEA < .001$) and still showed significant stability from T6 to T7 (Appendix Table 3).

The next question was whether PPK and APPK still was significant predictors controlling for the link between them and previous delinquency. A new model was fitted adding PPK and APPK to the model as a predictor of delinquency at T7. This model showed an adequate fit (Chi-square ($df = 142, N = 314$) = 200.307, $p < .001$, $CFI = .958$, $RMSEA = .037$). The regression weights, however, indicated that when controlling for each other and delinquency at T6, neither PPK nor APPK predicted Delinquency at T7 (see Table 8).

Table 8

<table>
<thead>
<tr>
<th>AR model, with predictors</th>
<th>Unstandardized $b$ coefficient</th>
<th>Standard Error</th>
<th>Standardized $\beta$ coefficients</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delinquency T6 (AR) $^a$</td>
<td>.449</td>
<td>.191</td>
<td>.451</td>
<td>.019</td>
</tr>
<tr>
<td>PPK</td>
<td>-.197</td>
<td>.135</td>
<td>-.122</td>
<td>.146</td>
</tr>
<tr>
<td>APPK</td>
<td>-.099</td>
<td>.118</td>
<td>-.087</td>
<td>.401</td>
</tr>
</tbody>
</table>

Note. $R^2 = .234$

$^a$ In all autoregressive models, AR signals that the variable(s) was not simply used as a predictor, but added to the model using the conventions of autoregressive modeling (see Biesanz, 2012).
Interestingly conducting two more models where PPK and APPK were analyzed separately showed the same results, that is, only delinquency at T6 predicted delinquency at T7 (seen in Table 4, in Appendix). Both models showed adequate fit with Chi-square \((df = 59, N = 314) = 70.16, p = .15, CFI = .98, RMSEA = .025\). For the APPK model and Chi-square \((df = 59, N = 314) = 86.79, p = .008, CFI = .958, RMSEA = .040\) for the PPK.

This indicates that the hypothesis that PPK and APPK are spuriously associated with delinquency cannot be ruled out. This does not, however, show that PPK or APPK is unimportant. One possibility for this effect might be that PPK has the same impact on delinquency at T6 as it has two years later, but that the effect is stable. In other words, PPK might lead to less delinquency at T6 which again leads to less delinquency later.

To test this possibility, the model using PPK and APPK as predictors was refitted, but with indirect paths from PPK and APPK through delinquency at T6 added. This model showed the same adequate fit (Chi-square \((df = 142, N = 314) = 200.307, p < .001, CFI = .958, RMSEA = .037\)). As can be seen in Table 9, the indirect path from both PPK and APPK is significant. However, seeing as both the perceived knowledge scores and the delinquent score are from T6, there is no way of ascertaining which way the effect goes. While the effect might go from perceived knowledge to delinquency, it might also be that delinquency leads to less knowledge.

### Table 9

*Indirect paths from APPK and PPK through delinquency T6 on delinquency T7*

<table>
<thead>
<tr>
<th>Unstandardized</th>
<th>Standard Error</th>
<th>Standardized β</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The indirect path of PPK</strong></td>
<td>-.113</td>
<td>.056</td>
<td>-.072</td>
</tr>
<tr>
<td><strong>The indirect path of APPK</strong></td>
<td>-.261</td>
<td>.118</td>
<td>-.205</td>
</tr>
</tbody>
</table>

It might seem redundant to ask if the relationship between PPK and aggression is spurious since this relationship was non-significant in the previous analyses. Due to the possibility of suppression effects and for the sake of comparison, the same procedure was, nevertheless, repeated on the aggression subscale. This model showed an adequate fit (Chi square \((df = 114, N = 314) = 150.949, p = .012, CFI = .958, RMSEA = .035\)).
As can be seen in Table 10, the only significant path was from T5 aggression to T6 aggression. This indicates that there is no link between PPK and aggression, neither to past nor present. Aggression did not predict PPK, nor did PPK predict further aggression.

Table 10
**AR model, showing the stability from T5 to T7 aggression**

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized $b$ coefficient</th>
<th>Standard Error</th>
<th>Standardized $\beta$ coefficients</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR aggression T5 ON aggression T6</td>
<td>.131</td>
<td>.057</td>
<td>.507</td>
<td>.002</td>
</tr>
<tr>
<td>AR aggression T6 ON aggression T7</td>
<td>1.194</td>
<td>.677</td>
<td>.386</td>
<td>.078</td>
</tr>
<tr>
<td>PPK ON aggression T7</td>
<td>.082</td>
<td>.097</td>
<td>.060</td>
<td>.401</td>
</tr>
<tr>
<td>PPK predicted by aggression T6</td>
<td>-.492</td>
<td>.327</td>
<td>-.228</td>
<td>.133</td>
</tr>
<tr>
<td>PPK predicted by aggression T5</td>
<td>-.014</td>
<td>.055</td>
<td>-.024</td>
<td>.797</td>
</tr>
</tbody>
</table>

*Note. R² for T6 = .256; T7 = .142; and PPK = .052. The horizontal lines in the table are not meant to signal different models, but used to signal different steps in the same model.

**Main Question Three: Is There An Interplay Between Parental Perceived Knowledge And Adolescent Perceived Knowledge?**

To test whether any kind of interplay existed between PPK and APPK, three different approaches were tested: the discrepancy approach, an interaction approach and a dyadic approach. However, due to space limitations and misgivings about the dyadic approach, this final approach is reported in Appendix B (see discussion in the introduction).

**The discrepancy approach.** Firstly, Low Reyes, Goodman, Kliewer, and Red-Quinones (2010) discrepancy score approach was tested. First a discrepancy score was created by transforming the individual reports into z scores. After the transformation, the adolescents’ scores were subtracted from the mothers’ scores. The score, hereafter referred to as knowledge discrepancy (KD), had a positive score when the mothers believed they had more knowledge than their adolescents did, and negative score when the adolescents believed they had more knowledge relative to the mothers (See Low Reyes, Goodman, Kliewer, & Red-Quinones, 2010, for a discussion of the approach).
A series of simple regression analysis were conducted to test if the discrepancy score had merit, the results can be seen in Table 11. The first analysis showed that the KD score was a significant predictor of delinquency at T6. The effect size was however much smaller than the effect seen for either PPK or APPK. The second analysis showed that the KD score was not a significant predictor two years later at T7. The next regression shows that KD score was not significant using the full delinquency scale at T7. The last analysis indicates the effect was even weaker when controlling for past delinquency. The R^2 statistics also showed that the models using only KD explained little of the variation in the data.

Overall, the analysis indicates that KD is not a strong predictor of delinquency. Further KD did not appear to predict any separate variance then PPK and APPK. That is, when KD was added to the model with PPK and APPK it was excluded from the model, because it did not predict any new variance.

**The interaction approach.** As outlined in the introduction, the last way PPK and APPK could be intertwined is through a classic interaction. The moderation analysis was carried out using SPSS, and followed a two-step regression, with an R change statistic as the indicator of an interaction.

The first moderation analysis used the simultaneous (T6) delinquency measure as the outcome variable. Adding an interaction term did significantly improve the model (\(\Delta R^2 = .01, p = .023\)). The regression weights can be seen in Table 12. As can be seen the interaction term

<table>
<thead>
<tr>
<th>Table 11: Table over the discrepancy analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>On delinquency T6 Discrepancy score</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>.067</td>
</tr>
<tr>
<td>On delinquency T7 Discrepancy score</td>
</tr>
<tr>
<td>On full delinquency T7 Discrepancy score</td>
</tr>
<tr>
<td>On delinquency T7 Discrepancy score</td>
</tr>
<tr>
<td>Delinquency T6</td>
</tr>
</tbody>
</table>

*Note. R^2 for the models were .013, .010, .007 and .222 respectively*
was a significant predictor of meaningful effect size. In contrast to what was predicted, the effect was positive.

Table 12
The interaction between PPK and APPK at T6

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized b coefficient</th>
<th>Standard Error</th>
<th>Standardized β coefficients</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>PPK</td>
<td>-.175</td>
<td>.066</td>
<td>.126</td>
</tr>
<tr>
<td></td>
<td>APPK</td>
<td>-.353</td>
<td>.049</td>
<td>-.347</td>
</tr>
<tr>
<td>Model 2</td>
<td>PPK</td>
<td>-.618</td>
<td>.206</td>
<td>-.445</td>
</tr>
<tr>
<td></td>
<td>APPK</td>
<td>-1.035</td>
<td>.304</td>
<td>-1.019</td>
</tr>
<tr>
<td></td>
<td>APPK X PPK</td>
<td>.213</td>
<td>.094</td>
<td>-.850</td>
</tr>
</tbody>
</table>

Note. The R² for the models were .169 and 179 respectively

The next two moderation analyses used the delinquency score from T7 and the full delinquency scale, respectively. In neither analysis did adding the interaction term improve the fit of the model to the data. In both models, $R^2$ remained the same down to the third decimal and were not significant with $p$ values of .912 and .928 respectively.

Overall, there is some evidence that there is an interaction between PPK and APPK, but this effect was only present when using the simultaneous measure, indicating that the interaction does not project into the future. The lack of any interaction two years later also makes the direction even more uncertain. When the interaction effect was present it was in the opposite direction of what was predicted. The positive effect indicates that when both PPK and APPK are high, the benefits of the two effects are less than would be expected if the effects were only additive.

**Main Question Four: Is There Evidence That the Mother Adolescent Relationship Have an Indirect Effect Through PPK and APPK?**

A SEM was constructed to test if the PPK and APPK worked as mediators between the relationship with the mother and delinquency. From the previous analysis it can already be ascertained that PPK cannot act as a mediator between the relationship and aggression. The model tested the direct and indirect effects of the relationship, through PPK and APPK with Full delinquency at T7 as the outcome.
The model showed an acceptable fit in terms of CFI and RMSEA (Chi-square ($df = 204, N = 361$) = 289.108, $p < .001$, $CFI = .954$, $RMSEA = .037$). As can be seen in Figure 1 the adolescent-mother relationship predicted both PPK and APPK, and as before, both PPK and APPK predicted delinquency at T7. Using Mplus to calculate the indirect path of the relationship through PPK and APPK also showed that these were significant (see Table 13). This indicates that the relationship has an indirect effect on delinquency two years later, both through APPK and PPK.

Figure 1: Path diagram of the relationship between relationship and delinquency mediated by PPK and APPK standardized coefficients under the line. Note. Unstandardized coefficients are over the line, Standardized coefficients are under the line. The $R^2$ are PPK =.048, APPK =.246 and Delinquency =.224

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized coefficient</th>
<th>Standard Error</th>
<th>Standardized $\beta$ coefficients</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>The indirect path through PPK</td>
<td>-.060</td>
<td>.0025</td>
<td>-.053</td>
<td>.017</td>
</tr>
<tr>
<td>The indirect path through APPK</td>
<td>-.258</td>
<td>.071</td>
<td>-.227</td>
<td>.000</td>
</tr>
</tbody>
</table>

**Discussion**

This paper set out to answer a single question: Does parental perceived knowledge (PPK) matter when it comes to antisocial behavior? As was discussed, this question could be divided into many different sub-questions, and not all the answers pointed in the same direction.
Independent Effect of PPK and Different sub Scales of Antisocial Behavior

The first main question was whether PPK could predict any amount of antisocial behavior when controlling for APPK. When the full TSAB was used, PPK did not predict antisocial behavior when controlling for APPK. When the TSAB was split into delinquent and aggressive behavior, PPK predicted delinquency two years later, even when controlling for APPK. However, when aggression was used as the outcome, PPK was not significant even without APPK in the model, indicating that PPK is only important when delinquency is concerned. This is somewhat in line with previous research, which has found smaller effects of perceived knowledge on aggression (e.g., Finkenauer, Engels, & Baumeister, 2005; Griffin, Botvin, Scheier, Diaz, & Miller, 2000; Reitz, Prinzie, Dekovic, & Buist, 2007).

The fact that PPK did predict delinquency when controlling for APPK gives some indirect support to the notion that PPK is not simply a product of adolescents’ disclosure of true information and misinformation, given that misinformation is unlikely to lead to adaptive steps. More convincingly and importantly, the finding gives support to the notion that parental perceived knowledge matters, regardless of its source. The impact of how mothers obtain and use information about their adolescents are therefore not the same as the effect of adolescents’ information management and conduct used to avoid getting in trouble.

The result that delinquency and aggression was differently associated with PPK gave a confirmatory answer to the second preliminary question: Does parental perceived knowledge have a different impact depending on type of antisocial behavior? The reason behind the difference is harder to answer. One possibility might come from the nature of delinquency compared to aggression. Delinquency is by definition acts that are illegal, meaning that under normal circumstances if you are caught, negative consequences follow. Therefore, it is not a far stretch to see that the consequences of being caught should weigh heavy when considering doing delinquent acts. Aggression, on the other hand, is not so easily conceptualized. Aggression has many subtypes that have different antecedents and consequences (Gendreau & Archer, 2005).

One distinction that seems particularly important is the distinction between reactive and proactive aggression. In previous research, when this distinction was used, a connection was found between parental supervision and proactive aggression, but not with reactive aggression (Brendgen, Vitaro, Tremblay, & Lavoie, 2001). This is not surprising, as people committing reactive aggression do not seem to be particularly deterred by the likelihood of being caught. In fact, some authors argue that reactive aggression is more likely when there are witnesses (Kenrick, 2011; Pinker, 2011). The aggressive factor used in this paper does not
allow for a distinction between proactive and reactive aggression, but seeing as the aggressive measure used probably contains both, this may be part of the explanation.

**The Direction of the Effect Between Perceived Knowledge and Antisocial Behavior**

In all non-experimental studies the question of direction is always paramount. Hitherto the discussion section has dealt with the subject as if it was settled that the direction went from PPK and APPK to antisocial behavior. For the most part the findings from the literature on the subject have concluded that the effect is bidirectional (Willoughby & Hamza 2010; Williams & Steinberg, 2011). In the present study, however, when controlling for past delinquency, no effect on further delinquency was found. This was true when PPK and APPK were tested together and when the analysis was carried out separately. In other words, this finding means that it was not possible to rule out the possibility that PPK or APPK was spuriously associated with delinquency. This is somewhat surprising given the bidirectional effect found in a number of studies (e.g., Kerr, Stattin, & Burk, 2010; Willoughby & Hamza 2011; Williams & Steinberg, 2011) and in sharp contrast to the one study that used a similar approach and finding compatible results after controlling for past delinquency (Lahey, VanHulle, D’Onofrio, Rodgers & Waldman, 2008).

The lack of an effect of perceived knowledge when controlling for past delinquency does not however necessarily mean that perceived knowledge is not important. One other possibility is that PPK and APPK have an impact on delinquency in the present (i.e., at age 14) and that this impact leads to less delinquency in the future. Or less technically, that perceived parental knowledge keeps adolescents away from delinquent behavior in the present, which again leads to less delinquency in the future. In terms of a growth curve model (GCM) this would be the same as claiming that PPK and APPK predicts stability, but not change. The present study did not however have appropriate data to perform a GCM. Therefore, to test if this was a possibility, a mediation analysis was carried out. The analysis showed that if the link between PPK and delinquency at age 14 was seen as going from PPK to delinquency, the indirect effect at delinquency at age 16 was significant. Importantly, this indirect effect was significant even when controlling for the direct and indirect effect of APPK. The caveat here is of course that since PPK, APPK and delinquency (at T5) is measured at the same point of time, there is no way to substantiate whether PPK and APPK lead to less delinquency or if the effect goes in the other direction.

Past research, although it did not use PPK and APPK as separate constructs, indicate that it is reasonable to at least think of the effect of parental perceived knowledge as
bidirectional (Kerr, Stattin, & Burk, 2010; Willoughby & Hamza, 2011; Williams & Steinberg, 2011). More compellingly, past research have also pointed toward a possible mechanism that could explain the possible mediation effect, namely contact with deviant peers. It has been known for a while that there is a connection between perceived knowledge and contact with deviant peers (Ary, Duncan, Duncan, & Hops, 1999). This finding has more recently been repeated and expanded upon by Trudeau, Mason, Randall, Spoth, and Ralston (2012). More precisely, they investigated whether effective parenting (including parental perceived knowledge) was mediated through bolstering against deviant peer contact. Even though the patterns they found were more complicated, in general their findings indicated that PPK have a bolstering effect against deviant peer contact. The present study does not include a measure of deviant peer contact, so the preceding explanation is tentative. However if PPK has a bolstering effect on deviant peer contact, which again leads to less delinquency, this is exactly the type of effect that could explain a mediation effect through current delinquency on further delinquency.

**Interplay Between PPK and APPK**

As was discussed, the question of whether an interplay between maternal and adolescents perceived knowledge is also not a straight forward question. In the current paper two different approaches were presented: the discrepancy approach and the interaction approach.

**Discrepancy scores.** The first analytic strategy used to investigate the possibility of an interplay between PPK and APPK was the discrepancy approach suggested by Low Reyes Goodman, Kliewer, and Red-Quinones (2010). The analysis was conducted using a series of regression analyses with different outcome variables and with a standardized discrepancy score as the predictor. The discrepancy score was computed so that a positive score indicated that the mothers believed they had more knowledge then their children believed that they had. The discrepancy score was, however, only significant when delinquency at age 14 was used as the outcome. When the outcome was the two delinquency scales from age 16, the regression analysis did not indicate that discrepancy predicted anything. In the one analysis, where the discrepancy score reached significance, the effect was much smaller than either the effect of PPK and APPK, individually. Also when either PPK or APPK was added to the analysis, discrepancy was no longer significant at any age.
Together, this gives only weak support to the notion that the discrepancy between mothers and their adolescents predicts delinquency. This is in sharp contrast to the findings of Low Reyes Goodman, Kliewer and Red-Quinones (2010) and Lippold, Greenberg and Feinberg (2011) who found that discrepancy was a strong and significant predictor.

**The interaction approach.** Lastly, an interaction approach was taken, where an interaction between PPK and APPK on delinquency, was tested. Again, the interaction analysis was done with a series of regression analyses with different outcome measures. Using the delinquency measure from age 14, an interaction effect was found. Surprisingly the interaction effect did not go in the direction that was hypothesized. Instead of PPK and APPK working together to further decrease delinquency, the analysis indicated that what is seen is a weakening of the effect. One possibility is that parental knowledge from both the adolescent and the mother at the high end of the scale reaches a point of diminishing returns. In other words, it might be that it is only so much parental knowledge can impact delinquency, so when both PPK and APPK are high, they do not get the full additive effect one would expect from the two combined. Another possibility is that the interaction effect signals the blowback effect discussed earlier (Hawk, Keijzers, Frijns, Hale, Branje, & Meeus, 2013). When both adolescent and mother believe that the mother have much knowledge this might, in some situation, signal intrusive parenting, which past research has indicated might lead to more behavioral problems (Barber, 2002).

The two next analyses did, however, not indicate that an interaction effect was present two years later. This indicates that if the interaction effect found at age 14 is not an artifact, it is not long lived.

**Mother-Adolescent Relationship.**

Lastly, it was asked whether maternal perceived knowledge worked as a mediator between the adolescent-mother relationship and antisocial behavior. Using the full delinquency subscale from age 16 it was shown that the quality of the relationship was mediated through PPK and APPK even when they controlled for each other.

The finding that maternal perceived knowledge works as a mediator between the mother-adolescent relationship and delinquency is not a new finding (Soenens, Vansteenkiste, Luckc, & Goossens, 2006; Fletcher, Steinberg, & Williams-Wheeler, 2004). What is new is the fact that both PPK and APPK works as mediators simultaneously. As was outlined above, if adolescents are the gatekeepers of parental knowledge and all mothers can do is to try to
facilitate a good relationship – in the hope that their adolescents will choose to disclose information – then mothers need to ingratiate themselves with their children. If this is the case, the mediation through PPK should disappear when the adolescent’s perspective is added to the analysis. If a good relationship only made the adolescent freely disclose more information than they otherwise would, it is still the adolescents that are in a position to really ascertain their mothers’ knowledge. If, on the other hand, mothers get information out of a good relationship that they otherwise would not get, and that is not dependent on their adolescents, the link should still be significant after controlling for the adolescents perspective. Seeing as this analysis indicated that both mediation paths were significant, this indeed appears to be the case. In a wider perspective, this again gives support to the claim that the whole process is best characterized as a family process.

It is not hard to theorize why this should be the case. A good relationship between the mother and the adolescents might make it harder for the adolescent to lie successfully, and should make it easier for the mother to get information, other than the adolescent freely disclosing information (like the hard to measure parental monitoring behaviors discussed in the introduction). The results of this analysis indicates that the relationship between parental knowledge is not a simple case of mothers ingratiating themselves to get adolescents to disclose, but also that a good relationship is a facilitator of valid or at least useful information, independent of the adolescents perspective. Again this indicates that PPK is not synonymous with APPK.

Apart from indicating that PPK is a significant mediator of the effect of the relationship on delinquency, the model indicates that what PPK predicts beyond APPK does not need to be due to information gained from what has been called intrusive parenting (e.g., searching through the adolescents belongings, when the adolescent is away, or eavesdropping) (Barber, 2002). It thus appears that useful, independent knowledge can be cultivated through less disruptive means, (e.g., paying attention to their adolescents or simply spending time with them).

The Lack of a Gender Effect.

In a number of the analyses it was pointed out that gender was originally added to the model, but was removed because gender did not predict any antisocial behavior. Importantly this paper did not set out to investigate gender effects. The findings, however, are in so sharp contrast to previous findings that it warrants some comments. Research specifically investigating gender specific effects of PPK, show mixed results. At least one study have
indicated that PPK have a stronger effect on girls than boys (Jacobson & Crockett, 2000), another study has however found stronger effects for boys than girls (Reitz, Prinzie, Dekovic, & Buist, 2007), while still other studies have found no gender effects connected to PPK (e.g., Fosco, Stormshak, Dishion, Charlotte, & Winter, 2012). In short, there is little reason to expect that gender should have a strong relationship with PPK or APPK. The surprising finding in this study is that gender did not predict antisocial behavior. The finding that boys commit more antisocial acts than girls is one of the most replicated findings in the field of antisocial behavior (Moffitt, Caspi, Rutter, & Silva, 2006; Rutter, Giller, & Hagell, 1998; Coleman, 2011). The effect is also of considerable size with boys preforming two to four times as many antisocial acts as girls (Moffitt, Caspi, Rutter, & Silva, 2006; Coleman, 2011). The gender effect also seems to be evident in both the subcategories used in this study (i.e., delinquency and aggression) (Coleman, 2011; Crick, Ostrov & Kawabata, 2007; Moffitt, Caspi, Rutter, & Silva, 2006).

Why no significant gender effect was found in the present study is to some extent an open question. One possibility is that the lack of an effect is a pure coincidence. As is well known when drawing random samples from a population, the sample means will cluster around the population mean and spread out in an approximately normal distribution. On the plus side this means that the overwhelming majority of samples with a large $N$ will have a mean approximating the population mean, however on rare occasions sample means from the long tails might be drawn (Field, 2009). Under normal circumstances this possibility should not be given too much attention, but when the finding deviates too sharply from other studies it should be taken into account.

A more intriguing option is the possibility that the finding is part of a trend that sees the gender divide closing. For instance, using data from 1957 to 1995, Rutter, Giller, and Hagell (1998) showed that the gender division has significantly decreased. Other authors have also noted decreasing gender divides both in violence and in general crimes (Prothrow-Stith, & Spivak, 2005). For instance, the number of girls arrested in the US increased with 269% between 1980 and 2000 (Luke, 2008). The topic is, however, currently hotly debated (Luke, 2008; Chesney-Lind & Paramore, 2001; Chesney-Lind, M. 2004). More research is clearly needed to see if we are actually looking at a new trend in the gender divide, and whether the findings from this paper is part of such a new trend. What can also be said is that if we are witnessing a new trend in antisocial behavior it is not unlikely that such a trend would appear sooner in Norway, then in many other countries, considering that Norway is one of the most gender equal countries in the world (Hausmann, Tyson, & Zahidi, 2008).
Theoretical Implications

As was discussed in the section concerning theories used in the monitoring/perceived knowledge literature, theories do not play a predominant role in the field. However, theories are of permanent importance when conducting socio-behavioral science.

From the discussion of Bronfenbrenner’s bio-ecological theory it is clear that adolescents and their mothers can be best seen as interdependent parts of a dyad (Bronfenbrenner, 1979, 2005). It is however more uncertain what type of dyads the adolescents and mothers were in, but in so far as the adolescents indicated that the parents had some knowledge about them, we can stipulate that at least an observational dyad must exist. That is a dyad where one person pays attention to the others actions and the second person at least (if sometimes disgruntledly) recognizes that the first person is paying attention. From this it follows that it is unwise to treat adolescents and their mothers as totally separate units of analysis. In accordance with this approach, this paper used several analytical methods to try to ascertain whether an interplay existed. When it comes to an interplay between different views of maternal knowledge, there was little evidence that such an interplay existed. So even though adolescents and their mothers by definition are in a dyad, there is little evidence that this leads to a dyadic interplay when it comes to views on parental knowledge.

Bronfenbrenner did not however write about parental knowledge, but more on the quality of the relationship (Bronfenbrenner, 1979). When the relationship was added to the model it was clear that an interplay existed between the adolescents and the mothers. There are always two parts of a relationship and having a good one made both the mother and adolescent perceive of the mother as having more knowledge. The bio-ecological theory is in many respects a meta-theory, making it hard to actually test it, but in general the view that mothers and their children should be seen as somewhat interdependent and therefore analyzed together, is supported when the relationship is concerned.

Stage environment fit theory was the first of the smaller theories discussed. The theory postulates that the behavioral decline often seen in adolescents can partly be explained by a lack of fit between the environment and the individual (Eccles, et al., 1993). In a general sense, the theory would predict that if parents let their children receive too much autonomy before they are actually ready, negative outcomes are more likely to follow. A cornerstone of autonomy is of course to be able to go and do what you want without needing to inform anybody. Parents that let their adolescent achieve too much autonomy too soon will thus be less informed, and since the autonomy in many cases will be premature, negative behavior may increase. This general notion of the stage environment fit theory is supported by the
present study, at least when it comes to delinquency. However, the data used in the study is not in the best position to fully investigate the full implications of the theory.

An important aspect of the theory is that certain transitions are particularly risky periods where parents need to be more attentive. One such period is the transition from lower to middle school. In Norway this happens the year adolescents turn 13. There is some evidence in the current paper that the transition to middle school sees an increase in delinquency, which is not predicted by past delinquency (see the AR model in the result section), and again PPK predicts less delinquency during the middle school years. However, due to the lack of variation in PPK at T5 it is not possible to evaluate whether PPK is particularly important at this transition, which the Stage environment fit theory would predict.

As was deliberated upon in the introduction, social control theory stipulates that delinquency follows from dysfunctional social control systems. In a general sense, Social control theory would also predict that if parents do not know about their adolescents’ activities they cannot exert effective control (Shoemaker, 2010). In this very general sense the finding in the paper support the theory, since PPK predicts less delinquency. Importantly, however, the finding that PPK predict less delinquency does not, by itself, stipulate that the path to delinquency put forward in the theory is the correct path.

As was discussed, social control theory postulates that the link between parenting and delinquency goes from bad parenting leading to weakened, faulty or mis-socialization in the adolescents, which again lead to weak attachment/relationship, which finally leads to more delinquency (Shoemaker, 2010). The finding from the study does not appear to support the path laid out by the theory. Here, it appears that a good relationship led to higher scores in both PPK and APPK which led to less delinquency. However, as was discussed, PPK and APPK do not fit in with other parenting constructs and how the theory is to be evaluated depends heavily on how PPK is viewed. From the perspective where PPK was seen as maternal monitoring, a low score would have been seen as a sign of bad parenting behavior (Stattin & Kerr, 2000). However, when PPK is seen as stemming from a family driven process (Hawk et al., 2013) this interpretation is no longer valid. From this reinterpretation it is more accurate to claim that the result cannot say anything about the link between dysfunctional parenting and the relationship. This simply follows from the claim that PPK and APPK are not simple measures of parenting.

The results of the analysis do, however, seem to indicate that the theoretical model is incomplete. That is, there appears to be intermediate steps between the mother-adolescent
relationship and delinquency. More precisely, the results indicate that parental knowledge needs to be added as a (partial) mediator between relationship quality and delinquency.

Lastly, Coercion theory has been much discussed in the literature, and previous research have given it some support (Crosswhite & Kerpelman, 2009; Keijser, Branje, Vandervalk, & Meeus, 2010). The theory stipulates that coercive acts by either part of a parent-adolescent relationship can lead to a positive feedback loop, where each negative act prompts the other party to reciprocate in kind, which further escalates the tension on the relationship. The end result of this process, according to the theory, is parental disengagement, which leads to even further antisocial behavior on the part of the adolescent (Patterson, 1982; Crosswhite & Kerpelman, 2009). The present study did not however set out to answer questions about a feedback loop and the data is not well suited for the task, since useable PPK and relationship measures was only collected on one occasion. What can be said is that a good relationship seems to be important for PPK and as such the results seem to at least validate the importance of keeping a good parent-adolescent relationship.

Limitations

There are some limitations in the following study. Generally speaking, the limitations can be divided into three categories: the sample, the instruments/measurements, and general shortcomings.

Limitations in the sample. On many accounts the TOPP sample is a representative sample with findings that can be generalized to the general Norwegian population. The sample, however, falls short on two accounts: gender and non-western immigrants. Since both boys and non-western immigrants are overrepresented in the crime statistic compared to girls and the general population respectively, this might be a problem (Skarðhamar, 2006; Moffitt, Caspi, Rutter, & Silva, 2006). More precisely, the present study might underestimate the amount of delinquency and aggressive acts compared to the general Norwegian population, as the sample includes more girls than boys and very few non-western immigrants (Skarðhamar, 2006; Moffitt, Caspi, Rutter, & Silva, 2006). Importantly, since gender did not predict any antisocial behavior in the present analysis, the problem of gender might be overstated. On the other hand it is possible that the boys that did not participate in the study are more antisocial than the ones who did. Further studies should therefore strive to achieve a more representative sample in terms of both gender and non-western immigrants.
Limitations in the measurements. While the parental knowledge scale from T6 and the relationship scale used showed good reliability and are, in general, supported by prior research, there are clear challenges with the TSAB and PPK scale from T5.

As was mentioned, the PPK scale from T5 is a three-point scale with four items. The result of the inquiry with the T5 PPK scale showed only minimum variation. The lack of variation stemmed from almost all the mothers answering at the top of the scale, on all four questions. In a sense, this could be considered a finding in its own right, but unfortunately the results probably stems from an artifact created by the measurement, more than any overconfidence on the part of the mothers. More precisely, the scale ranged from 1 (I do not know anything), to 2 (I know little), to 3 (I know a lot). It is not hard to see why this scale might lead to problems. At one end of the scale the questions are anchored by a statement professing total ignorance, a somewhat extreme situation, considering that this was about 12 year old children. The second anchor also indicates a situation where the mothers are close to ignorance or at least closer to ignorance then feeling reasonably informed. This of course leaves only the last point on the scale. Importantly, beyond professing only a little knowledge about their adolescents’ daily activities, there are a lot of possible variation. Some mothers might have perceived themselves as having complete knowledge, some might have believed that they knew most, but not everything, others still, might have seen themselves as having adequate, but by no means complete, knowledge. In other words, the lack of alternatives on the scale is a more likely reason for the lack of variation than any homogeneity among Norwegian mothers. The problems with the PPK scale did not hamper the results of the present paper, since it was simply removed from the study. The problems with the scale did however seriously hamper the analysis used and the questions that could be addressed.

The next, and somewhat more serious, measurement problems stem from the TSAB. At the surface the TSAB at T5 and T6 seem to be valid scales of antisocial behavior, but there are clear measurement problems. The situation is even more problematic when the shorter TSAB from T7 is considered. Firstly, it is a problem that the TSAB has not received a substantial exploratory factor analysis. In prior research the attempts at validation were performed using a confirmatory factor analysis, were the items were treated as categorical variables (see Kjeldsen, 2013). Further, while the TSAB from T5 and T6 might be considered valid on their own, pitfalls exist when the scales are used to compare changes over time. First of all, some items were swapped for other items, and secondly the wording changed on all items referring to violence. The change in wording added the phrase that violence towards
siblings was to be ignored. This change probably led to an underestimation of violence at T6 compared to T5. The problems are even more formidable when the TSAB from T7 is concerned. Here, even more items were changed and new items added. To deal effectively with these measurement problems, CFA was used to try to achieve a reasonably equal structure on all waves, while trying to use the most of the variation in the dataset. The approach, however, sometimes led to less than optimally reliable scales. To deal with this last problem, a separate EFA was used on the TSAB from T7, which did not strive for a comparable structure at T6 and T5. To some extent the approach taken solved some of the weaknesses in the TSAB. Other researchers should, however, try to replicate the findings with other measurements of aggression and delinquency.

**General limitations.** There were a couple of general shortcomings in the study. One general weakness already discussed was the fact that the dataset was not as extensive as it could have been. More precisely, the lack of an adequate perceived knowledge scale on more than one wave made it hard to fully investigate the direction of the effect. Further, in one of the latent analyses there was a problem with a negative correlation matrix, in that it was not possible to resolve without letting two items that should not correlate, correlate. The problem did not however have an impact on the results, since the model in question (i.e., the delinquency AR from T5 to T7) was discarded for other reasons.

In the present study, PPK was measured using only the mothers’ report. In a sense, the PPK could have been defined as maternal perceived knowledge. The APPK scale, on the other hand, was measured in a more global way, including both parents. This situation naturally might lead to some pitfalls in the inferences drawn in the study. More precisely the most critical confounding hypothesis is that PPK has a separate effect on delinquency, because the APPK measure also includes the adolescents’ view of the fathers’ knowledge. The potential pitfalls might however be less serious than they first appear.

Firstly, it is the adolescents’ reports that are the more inclusive, so when a separate effect of the mothers’ reports is found, it cannot easily be attributed to adolescents including the father in the answer. To clarify, adolescents are likely to answer the questions according to the parent they feel have the most knowledge. If an adolescent believes the mother knows everything they do, he/she will probably answer that adults at home knows everything he or she does. If, in some circumstances, the adolescents believe the father has the most knowledge, the mothers’ relative lack of knowledge is not likely to predict further declines in delinquency. The opposite does not, however, necessarily hold true. The separate effect of
APPK can be such a pitfall, but from the general literature this possibility is not very likely and not the main focus of the paper. Secondly, and more convincingly, in studies that have included both mothers and father, mothers are the more knowledgeable. Further, it appears that the fathers, in many circumstances, get their knowledge about the adolescents from the mothers. In other words, the mothers’ and fathers’ perceived knowledge is by no means independent of each other and it is the mothers that usually are the most important of the two, when PPK is concerned (Hoeve, Dudas, Eichelsheim, Laan, Smeenk, & Gerris, 2009; Waizenhofer, Buchanan, & Jackson-Newsom, 2004). This being said, further studies should strive to include the father in the analyses. It would be interesting to view whether fathers also might have a separate effect, and the possibility of further gender interaction (e.g., father x son vs. father x daughter) is clearly of interest.

**Conclusion**

This paper asked one question: Does parental knowledge matter when it comes to antisocial behavior. The conclusion is not straightforward. First, it depends on what is meant by antisocial behavior. Regarding aggression, this paper finds no association with PPK. Regarding delinquency, however, it appears that PPK is a separate and important predictor in its own right. Importantly, the paper did not find any evidence that the direction goes from PPK to delinquency and not the other way around, leaving this an open question. There were also little evidence to support any kind of interplay between PPK and APPK. First, the discrepancy between mothers and adolescents views about parental knowledge did not seem to predict anything more than PPK or APPK did separately. Secondly, the only evidence of an interaction was seen simultaneously at age 14 and was in the opposite direction of what was expected. That is the analysis indicated that when the interaction between PPK and APPK is taken into account, the impact of parental knowledge on delinquency is less then would be expected, on grounds of the main effects.

When the relationship between the adolescent and the mother was taken into account, the analysis indicated that PPK mediated the path from the quality of the relationship to further delinquency, even when controlling for the APPK, indicating that PPK is a separate mediator from the mother adolescents relationship on delinquency.

Overall, this paper concludes that PPK is an important predictor in its own right when it comes to delinquency, but further investigations need to address the question of direction, when PPK and APPK are used as separate constructs. The link between perceived parental
knowledge and delinquency thus seems to be a family driven process and not solely an adolescent driven one.

On a more practical note, the findings indicate that parents should try to stay informed through their youth’s adolescence and not just rely on them to willingly and unsolicited provide information. The findings do not, however, indicate that information should be sought by all means. Since it appears that mothers can obtain useful information from a good relationship with their adolescents, excessive knowledge gathering strategies that corrodes the relationship might easily backfire. Therefore, even though the adolescence period often seems as the age of truly thankless parenting, parents that strive for a warm and loving relationship with their children seems to be in the best position to be kept informed. Thus, as this paper indicates: Parental perceived knowledge matters.
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Appendix

This Appendix is divided into three parts: A, B, and C. Part A contains tables from analyses reported in the paper that was not seen as relevant enough to be part of the main paper. Part B contains the analysis from the dyadic approach. Lastly part C contains the original questionnaires used in to gather the dataset.

Appendix A.

Table 1

*Factor solution for the full delinquency*

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor one</th>
<th>Factor two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drunk so much that drunk that I've felt clearly intoxicated</td>
<td>.650</td>
<td></td>
</tr>
<tr>
<td>I have tried hashish or marijuana</td>
<td>.462</td>
<td></td>
</tr>
<tr>
<td>Taking money from the family,</td>
<td>.505</td>
<td></td>
</tr>
<tr>
<td>Taken goods at the mall, etc.,</td>
<td>.522</td>
<td></td>
</tr>
<tr>
<td>Sneaked away from paying cinema el,</td>
<td>.511</td>
<td>.</td>
</tr>
<tr>
<td>Hitting, kicking,</td>
<td>.719</td>
<td></td>
</tr>
<tr>
<td>Threatened to hit or damage</td>
<td>.739</td>
<td></td>
</tr>
<tr>
<td>Been in a fight,</td>
<td>.491</td>
<td></td>
</tr>
<tr>
<td>Scratched or tugged,</td>
<td>.379</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Factor loading under +.3 is removed from the table.
Table 2

*AR model, showing the stability from T5 to T7 delinquency*

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized b coefficient</th>
<th>Standard Error</th>
<th>Standardized β coefficients</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delinquency T6</td>
<td>0.393</td>
<td>.156</td>
<td>.469</td>
<td>.001</td>
</tr>
<tr>
<td>predicting Delinquency T7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delinquency T5</td>
<td>1.942</td>
<td>1.601</td>
<td>.492</td>
<td>.225</td>
</tr>
</tbody>
</table>

*predicting Delinquency T6*  

*Note.* R squared T6 = .242; R squared T7 = 220

Table 3

*AR model, showing the stability from T6 to T7 delinquency*

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized b coefficient</th>
<th>Standard Error</th>
<th>Standardized β coefficients</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delinquency T6</td>
<td>0.512</td>
<td>.193</td>
<td>.570</td>
<td>.0008</td>
</tr>
<tr>
<td>predicting delinquency T7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* R squared = .325

Table 4

*AR model, with only PPK as a predictor and AR model, with only APPK as a predictor*

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized b coefficient</th>
<th>Standard Error</th>
<th>Standardized β coefficients</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model One</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delinquency T6</td>
<td>.483</td>
<td>.184</td>
<td>.492</td>
<td>.009</td>
</tr>
<tr>
<td>(AR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPK</td>
<td>-.175</td>
<td>.127</td>
<td>-.119</td>
<td>.167</td>
</tr>
<tr>
<td>Model Two</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delinquency T6</td>
<td>.490</td>
<td>.197</td>
<td>-.513</td>
<td>.001</td>
</tr>
<tr>
<td>(AR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APPK</td>
<td>-.112</td>
<td>122</td>
<td>-.101</td>
<td>360</td>
</tr>
</tbody>
</table>

*Note.* R squared model one = .327; R squared model two = .297
Table 5  
Attrition analysis using logistic regression, concerning attrition from T5 and T6

<table>
<thead>
<tr>
<th>Model one.</th>
<th>Unstandardized b coefficient</th>
<th>Standard Error</th>
<th>Odds ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attrition from T5</td>
<td>Delinquency T5</td>
<td>.266</td>
<td>.298</td>
<td>1.305</td>
</tr>
<tr>
<td></td>
<td>Aggression T5</td>
<td>-.175</td>
<td>.224</td>
<td>.951</td>
</tr>
<tr>
<td>Model two.</td>
<td>Attrition from T6</td>
<td>PPK</td>
<td>.299</td>
<td>.273</td>
</tr>
<tr>
<td></td>
<td>APPK</td>
<td>-.268</td>
<td>.199</td>
<td>1.307</td>
</tr>
</tbody>
</table>

Note. The dependent variable in model one was dummy coded 1 = participated in T7, 0 = drop out after T5. R squared = .003 (Cox & Snell); .004 (Nagelkerke). The dependent variable in model two was dummy coded 1 = participated in T7, 0 = drop out after T6, R squared model two = .011 (Cox & Snell); .016 (Nagelkerke).

Appendix B

**The Dyadic Approach.** The dyads where created by splitting the APPK and PPK on the median and then classifying the dyads according to whether mothers and adolescents were above the median (youth high–mother high), both below the median (youth low–mother low), the mother above and the adolescence below (youth low–mother high), and lastly the mothers below and the adolescence above (youth high, mothers low).

To test the dyadic approach, two ANOVAs were conducted: one using the deficiency scale from T6, and one using the delinquency scale from T7. The aggression subscale was not included because the previous analysis did not show any connection between aggression and PPK.

Because the delinquency scale from both T6 and T7 showed some deviation from normality a Log 10 transformation was performed. The transformation was successful in removing the deviation in all but on sub-group, the youth low mother high dyad.

The first one way ANCOVA was conducted (dyads) (covariate; gender x income x education) and using delinquency T6 as the dependent variable. As before neither gender, income or education predicted delinquency and there were no meaningful interactions. The control variables where therefore removed from the analysis and a one way ANOVA were conducted using dyads as the independent variable. There were a significant main effect of dyads [F (3,437) = 17.903, p < .001]. The post hoc test using the Turkey post hoc test indicated that the youth high – mother high dyad (M =.072, SD =.104) was significantly different from the youth low- mother low dyad (M =.188, SD =.181), but not from the youth low – mother high ( M =.110, SD =.138) nor from the youth high mother low (M =.075, SD
= .123). On the other end of the spectrum the mother low- youth low (M = .188, SD = .181), was significantly different from all other groups. The youth low- mother high dyad was not significantly different from the youth high mother low dyad.

Together this indicates that there is some kind of interplay between PPK and APPK when seen from a dyadic perspective. If only the adolescence had an impact the only effect seen should be between the dyads were the adolescent were low and the dyads were the adolescent were high.

Next another one way ANCOVA was conducted using the same control variables as in the previous analysis, but now with delinquency at T7 as the dependent variable. As before only the dyads was a significant predictor so the control variables were removed from the analysis and a one way ANOVA was conducted. Again there were a significant main effect of dyads \[F(3,312) = 8.408, p < .001\]. The Turkey post hoc test again indicated that the youth high – mother high dyads (M = .326, SD = .323) was significantly different from the youth low mother low dyads (M = .619, SD = .354), and not different from youth high mother low (M = .357 SD = .330). In contrast to the last ANOVA the Mother high youth high dyads were significantly different from the mother high youth low dyads (M = .464, SD = .377). In the other end of the spectrum the mother low youth low dyad were again different from all other dyads. There was no indication that the mother high-youth low dyads differed from the mother low youth high dyads. The results indicate, as before, that there is an interplay between adolescents and their mothers. Further the results show that the effect is still at work two years later.

Finally, a one-way ANCOVA was conducted using delinquency at T7 as dependent variable and dyads and delinquency at T6 as the independent variables. This last analysis showed that when T6 delinquency was added, the dyads were no longer significant \[F(4, 309) = 2.221, p = .086\]. This last analysis indicates that dyadic membership did not predict delinquency two years later, when controlling for past delinquency.

**Discussion of the dyadic approach.** In the dyadic approach, two ANOVAs were conducted: one using delinquency at age 14 and one using delinquency age 16 as the dependent variable. The results were very much similar in the two age groups. At both ages the dyads were a strong and significant predictor. Importantly, this alone does not signify that there is an interplay since a significant effects of dyads by itself can be caused simply by APPK. The post hoc tests, however, gave some support to the notion that an interplay was in effect. At age 14 the dyads where both the mother and adolescent believed that the mother
was well informed, was significantly different only from the dyads where the mother and adolescent believed that the mother was poorly informed. This effect could easily be explained by adolescents in the first dyads seeing the mother as well informed and in the other viewing her as poorly informed. At the other end of the spectrum, however, dyads where both the mother and adolescent agreed that mothers were badly informed was significantly different from all other dyads. The dyads where mother felt badly informed and the adolescents felt their mothers were well informed did not differ significantly from the opposite dyads. The same test preformed two years later, showed comparable results, but now with the mother-high youth-high dyads differing significantly from the dyads where the mother felt well informed while the adolescent believed she was less well informed. All other post tests showed the same results.

The findings in the present study differed in important ways from the previous work using dyads (Lippold, Greenberg, & Feinberg, 2011). In their study it was the dyads where both mothers and adolescents believed that the mother was well informed that differed from all other groups. Also the mother high-youth low dyads differed from the mother low youth-high dyads.

Together, the two analyses in the present study again indicate that PPK must have an impact on adolescence delinquency. Less clear is whether this finding actually indicates that an interplay exists between PPK and APPK. While it is clear that both mothers’ and adolescents’ perspectives matter, it is not clear if this is a true interaction or just two additive effects.

**Appendix C**
The original questions from the TOPP data collection

Mother reported perceived knowledge at T5.

<table>
<thead>
<tr>
<th>Hvor mye antar du at du virkelig vet om:</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hvor han/hun er om kvelden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hva han/hun gjør i fritiden</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hvor han/hun vanligvis er etter skoletid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hvem han/hun er sammen med</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Mother reported perceived knowledge at T6.

Adolescents reported parental Perceived knowledge T5.

Adolescents reported parental Perceived knowledge at T6.
TOPP Scale of Antisocial Behavior at T5.

### Brudd på regler

<table>
<thead>
<tr>
<th>Antisocial Behavior</th>
<th>Skjedd 1 gang</th>
<th>Skjedd 2-3 ganger</th>
<th>Skjedd 4-10 ganger</th>
<th>Skjedd mer enn 10 ganger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lurt deg fra å betale på kino, kafe, buss, tog eller liknende</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Sprayet graffiti, tegnet eller skrevet på en vegg eller liknende, uten å ha lov til det</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Talt penger fra noen i familien din uten å ha lov</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Talt varer fra kjøpesenter, butikk eller kiosk uten å betale</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Skulket en eller to skoletimer</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
</tr>
<tr>
<td>Med vilje ødelagt eller knust vindusrutter, benker, telefonkiosker, postkasser, hageplanter eller liknende</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>Tyvint en sykkel eller mopeder</td>
<td>25</td>
<td>26</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>Skulket skolen en hel dag</td>
<td>29</td>
<td>30</td>
<td>31</td>
<td>32</td>
</tr>
</tbody>
</table>

### Med vilje ødelagt stoler, bord, pulver, eller andre ting som tilhører skolen din

<table>
<thead>
<tr>
<th>Antisocial Behavior</th>
<th>Skjedd 1 gang</th>
<th>Skjedd 2-3 ganger</th>
<th>Skjedd 4-10 ganger</th>
<th>Skjedd mer enn 10 ganger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klort eller lugget noen</td>
<td>33</td>
<td>34</td>
<td>35</td>
<td>36</td>
</tr>
<tr>
<td>Med vilje ødelagt seters på buss, kino, eller andre steder</td>
<td>37</td>
<td>38</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td>Stjålet ting fra noen som kommer eller veske, når øyeren ikke var tilstede</td>
<td>41</td>
<td>42</td>
<td>43</td>
<td>44</td>
</tr>
<tr>
<td>Oppholds deg på andre steder enn du har lov til</td>
<td>45</td>
<td>46</td>
<td>47</td>
<td>48</td>
</tr>
<tr>
<td>Brutt deg inn i en butikk, hus eller leilighet, for å sjekle noe</td>
<td>49</td>
<td>50</td>
<td>51</td>
<td>52</td>
</tr>
<tr>
<td>Værst ute mye senere på kvelden eller natten enn du har lov til</td>
<td>53</td>
<td>54</td>
<td>55</td>
<td>56</td>
</tr>
</tbody>
</table>
### TOPP Scale of Antisocial Behavior at T6

#### Brund på regler

<table>
<thead>
<tr>
<th>115</th>
<th>Lurt deg fra å betale på kino, kafe, buss, tønkor eller liknende</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>Talt penger fra noen i familien uten å ha lov</td>
</tr>
<tr>
<td>117</td>
<td>Talt vare fra kjøpesenter, butikk eller kiosk uten å betale</td>
</tr>
<tr>
<td>119</td>
<td>Skulket en eller to skoltemper</td>
</tr>
<tr>
<td>119</td>
<td>Med ville ødelagte eller knust vindusrutter, bænker, postkasser, hageplanter eller liknende</td>
</tr>
<tr>
<td>120</td>
<td>Skulket skolen en hel dag</td>
</tr>
<tr>
<td>121</td>
<td>Med ville ødelagte stoler, bord, pulter, eller andre ting som tilhører skolen</td>
</tr>
<tr>
<td>122</td>
<td>Klort eller lugget noen (ikke saksøn)</td>
</tr>
<tr>
<td>123</td>
<td>Med ville ødelagte seler på buss, kino, eller andre steder</td>
</tr>
<tr>
<td>124</td>
<td>Sjålet ting fra noen som kommer eller veske, når eieren ikke var tilsidde</td>
</tr>
<tr>
<td>125</td>
<td>Opptoldt deg på andre steder enn du har lov til</td>
</tr>
<tr>
<td>126</td>
<td>Brutt deg inn i en butikk, hus eller leilighet, for å stjæle noe</td>
</tr>
<tr>
<td>127</td>
<td>Værte ute mye senere på kvelden eller natten enn du har lov til</td>
</tr>
</tbody>
</table>

#### Trust med å slå eller skade noen (ikke saksøn)

| 128 | Trust med å slå eller skade noen (ikke saksøn)                  |
| 129 | Værte i slåskamp på skolen eller andre steder                  |
| 130 | Slått eller sparket noen (ikke saksøn)                         |
| 131 | Trust eller tvenget noen til å gi deg penger eller andre ting  |
| 132 | Hatt med deg våpen (kniv, bølire eller liknende) eller gjenstander du tenkte kunne brukes som våpen, på skolen eller andre steder |
| 133 | Værte i slåskamp hvor du har brukt våpen (kniv, bølire eller andre gjenstander |
### TOPP Scale of Antisocial Behavior at T7

#### Brudd på regler

<table>
<thead>
<tr>
<th>Item</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lurt deg fra å betale på kino, kafe, buss, tog eller liknende</td>
<td>0</td>
</tr>
<tr>
<td>Tatt penger fra noen i familien din uten å ha lov</td>
<td>0</td>
</tr>
<tr>
<td>Tatt varer fra kjøpesenter, butikk eller kiosk uten å betale</td>
<td>0</td>
</tr>
<tr>
<td>Skulket en eller to skoletimer</td>
<td>0</td>
</tr>
<tr>
<td>Med vilje ødelegger eller knust vindusruter, benker, postkasser, hageplanter eller liknende</td>
<td>0</td>
</tr>
<tr>
<td>Klort eller lugget noen (ikke søsken)</td>
<td>0</td>
</tr>
<tr>
<td>Brutt deg inn i en butikk, hus eller leiighet, for å stjæle noe</td>
<td>0</td>
</tr>
<tr>
<td>Truet med å sla eller skade noen (ikke søsken)</td>
<td>0</td>
</tr>
<tr>
<td>Vært i slåskamp på skolen eller andre steder</td>
<td>0</td>
</tr>
<tr>
<td>Slått eller sparket noen (ikke søsken)</td>
<td>0</td>
</tr>
<tr>
<td>Drukket så mye at du har følt deg tydelig beruset</td>
<td>0</td>
</tr>
<tr>
<td>Prøvd hasj eller marijuana</td>
<td>0</td>
</tr>
</tbody>
</table>

### Adolescent reported relationship with the mother at T6

#### adolescent reported relationship with the mother at T6

<table>
<thead>
<tr>
<th>Item</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeg kan stole på at hun hjelper meg hvis jeg har problemer</td>
<td>Nære</td>
</tr>
<tr>
<td>Hun oppmuntrer meg alltid til å gjøre mit beste</td>
<td></td>
</tr>
<tr>
<td>Hun oppmuntrer meg til å ta egne valg</td>
<td></td>
</tr>
<tr>
<td>Hun hjelper meg med skoleanmeldet hvis det er noe jeg ikke forstår</td>
<td></td>
</tr>
<tr>
<td>Når hun vil jeg skal gjøre noe, forklarer hun hvorfor</td>
<td></td>
</tr>
</tbody>
</table>