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Depressive Symptoms predict Less Secure Attachment

A Bidirectional Investigation of Attachment and Internalizing Symptoms in Middle Childhood

Masteroppgave

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Author Note

This thesis uses data from the Trondheim Early Secure Study (TESS), which is an ongoing longitudinal study of a community sample of children living in the city of Trondheim, Norway. The focus of this thesis was based on a prior assignment in "Specialization - Learning, Behavior and Environment" (PSY 3113), and in collaboration with my supervisors: Associate Professor Kristine Rensvik Viddal and Professor Silje Steinsbekk. Analyses have been performed together with Silje Steinsbekk in her office, as the data file and the statistical program used in TESS-studies (Mplus 7) have been stationed on her computer. Due to copyright issues, the inventories used in this study are not attached in the appendix.

I would like to thank all the children and parents participating in TESS, as well as the large group of people working on the project. I also thank Professor Lars Wichstrøm for giving me access to the TESS data base. In particular, I would like to thank my supervisors, Kristine Rensvik Viddal and Silje Steinsbekk, for including me in this project and for guiding me throughout the process. The two of you have made it possible for me to study a topic for which I have a great passion. For this, I am entirely grateful. Thank you for being my secure bases throughout this process, and for answering my questions - big and small, time and again. You have provided excellent scaffolding, support and encouragement that has allowed me to grow and learn so much. Your patience, ideas and feedback are highly appreciated <3.

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Abstract

Attachment theory posits that repeated caregiving-experiences with parents influence children's formation of (in)secure attachment, which in turn impact children's perceptions of themselves and the world. Specifically, attachment theory proposes that less securely attached children risk developing less healthy socioemotional habits, including internalizing symptoms. Internalizing problems might also negatively impact children's attachment security, as they can evoke strong attachment needs that parents have difficulties accommodating. Children's attachment security is also theorized to become more fixed as children mature, as a way for the developing child to adapt to their surroundings. A considerable amount of research has explored whether children's attachment security predict internalizing symptomatology, but surprisingly little is known about whether and how internalizing problems might influence attachment security. On top of that, middle childhood is a particularly understudied period in the research field on attachment security and developmental psychopathology.

This thesis aims to contribute to the literature by examining reciprocal relations between attachment insecurity and symptoms of internalizing problems (i.e., symptoms of anxiety and depression) in late middle childhood (from ages 10 to 12 years) in a Norwegian community sample ($n = 709$). Because potential bidirectional relations between attachment security and internalizing symptomatology relies on the degree to which attachment security can be modified, stability of attachment is also assessed. Attachment security was measured with Security Scale, symptoms of anxiety and depression was measured with the Child and Adolescent Psychiatric Assessment. I hypothesized that: *i*) greater attachment insecurity at age 10 predict more symptoms of anxiety and depression at age 12, *ii*) more symptoms of anxiety and depression at age 10 predict greater attachment insecurity at age 12, *iii)* attachment security is moderately stable from ages 10 to 12 years. Contrary to the first hypothesis, attachment security did not predict levels of internalizing problems from ages 10 to 12 years. Support for the second hypothesis was mixed: anxiety-symptoms did not predict attachment security, but more depressive symptoms at age 10 predicted less secure attachment at age 12. In line with the third hypothesis, attachment security was moderately stable from ages 10 to 12 years. Implications of the findings are discussed.

Depressive Symptoms predict Attachment Insecurity - A Bidirectional Investigation of

Attachment and Internalizing Symptoms in Middle Childhood

Ever since Bowlby (1969/1982) introduced attachment theory, this theoretical framework has been regarded as an important contribution for understanding normal and abnormal development throughout the lifespan (Fearon, Groh, Bakermans-Kranenburg, Van Ijzendoorn, & Roisman, 2016). A key aspect of attachment theory is the understanding that children's repeated interactions with parents create a foundation for successive interpretations of inter- and intrapersonal experiences, through cognitive schemas known as internal working models (IWMs) (e.g., Bretherton, 1985). By shaping how children perceive themselves and others, IWMs are thought to influence the ability to cope with internal and external demands, which in turn is thought to impact children's risk for developing psychological difficulties (Fearon et al., 2016). As such, IWMs are, depending on their quality, considered as risk factors or protective factors for developmental outcomes.

Based on their care history, children vary in the extent to which they develop secure attachment relationships to their parents (Bowlby, 1969, 1982). Children are defined as securely attached if their IWMs encompass expectations that parents will be reliably accessible and respond sensitively to the child's needs (Kerns & Brumariu, 2016). More specifically, secure children expect parents to be available as "secure bases", from which the child can explore and as "safe havens" from which the child can receive comfort whenever the attachment system is activated (Bosmans & Kerns, 2015). Securely attached children also tend to hold positive beliefs about themselves and others, including perceptions of others as loving and the belief that they themselves are worthy of receiving love and care (e.g., Brumariu & Kerns, 2010; Kerns & Brumariu, 2016). By contrast, more insecurely attached children do not perceive parents as reliable sources of comfort and support, which puts them at risk for developing less optimal coping strategies and self-views (Cassidy, Jones, & Shaver, 2013; Kerns & Brumariu, 2016).

Bowlby (1973, 1980) theorized that insecure attachment relates to anxiety as well as depression. Bowlby argued that children's concerns about caregiver-availability constitute the basis of anxiety, and that actual or perceived loss (e.g., psychological unavailability or lack of support from caregivers) increases children's vulnerability for depression. What is less known, perhaps, is that Bowlby (1973, 1980) also proposed that children's psychological problems can heighten the risk for developing less secure attachment relationships to parents.

Bowlby noted that present psychopathology might evoke strong attachment needs that are not easily assuaged by caregiver-responses. As such, children who experience prolonged psychological turmoil may incorporate the belief that parents are unable to function as safe havens, which ultimately increases the child's attachment insecurity. The main aim of the present thesis is to prospectively test this assumed bidirectional relation between attachment and internalizing symptomatology (herein defined as symptoms of anxiety and depression).

In the wake of attachment theory, research on associations between children's and adolescent's attachment insecurity and internalizing symptomatology has flourished (see e.g., Brumariu & Kerns, 2008; Kerns, Brumariu, & Seibert, 2011; Lee & Hankin, 2009; Shamir-Essakow, Ungerer, & Rapee, 2005). Most notably, qualitative and quantitative reviews have provided important overviews of trends in the literature. A qualitative review of 55 studies (N = 7,207) (see Brumariu & Kerns, 2010) and a following meta-analysis of 42 independent samples (N = 4,614) (see Groh, Roisman, van Ijzendoorn, Bakermans-Kranenburg, & Fearon, 2012) both concluded that insecurely attached children and adolescents tend to have higher levels of anxiety and depressive symptoms than those rated as secure. However, in both reviews, findings were mixed, and the quantitative review reported a small effect size for the overall associations (d = .15) (Groh, Fearon, van Ijzendoorn, Bakermans-Kranenburg, & Roisman, 2017; Groh et al., 2012). A recent meta-analysis (K=165, N=48,224), (see Madigan, Brumariu, Villani, Atkinson, & Lyons-Ruth, 2016) comprising exclusively representational- and questionnaire-based measures of attachment, similarly reported a considerable variation of findings across single studies, but estimated a stronger overall effect-size for the relation between attachment insecurity and internalizing problems (d = .58). This latter review also distinguished itself as the only study comparing effect sizes for anxiety-specific measures and depression-specific measures. Statistical analyses revealed a significantly larger association between attachment security and depression (d = .81) than for attachment security and anxiety (d = .38).

In sum, all three reviews (Brumariu & Kerns, 2010; Groh et al., 2012; Madigan et al., 2016) reported a relation between less secure attachment and more symptoms of anxiety and depression, while noting considerable variations of findings across individual studies. However, the reviews reported quite different magnitudes of the associations between attachment insecurity and internalizing problems, and only one review formally compared effect sizes within the internalizing spectrum. Due to these inconsistencies, it is difficult to draw firm conclusions regarding the strength of relations between attachment, anxiety-symptoms and depressive symptoms in children and adolescents.

The reviews cited above have contributed to illuminate limitations and gaps in the attachment-internalizing literature, emphasizing the following issues: First of all, little is known as to whether internalizing problems affect attachment security. Indeed, practically all research has examined the opposite developmental pathway (i.e. the effect of attachment on internalizing problems) (Allen, McElhaney, Kuperminc, & Jodl, 2004). Robust longitudinal research is therefore needed to establish directions of the influences and to disentangle possible bidirectional effects between attachment and internalizing symptomatology (Brumariu & Kerns, 2010; Madigan, Atkinson, Laurin, & Benoit, 2013; Roisman, Fortuna, & Holland, 2006). Secondly, few studies have applied diagnostic measures when assessing children's symptoms of anxiety and depression (Brumariu & Kerns, 2010; Madigan et al., 2016). Instead, most attachment-studies have determined children's internalizing problems from self-reports distributed to parents and teachers (Groh et al., 2017). This approach is not ideal for detecting true effects given the less public nature of internalizing symptomatology, especially concerning children that systematically avoid using attachment-figures as safe havens (Fearon et al., 2016; Lagattuta, Sayfan, & Bamford, 2012; Madigan et al., 2016). A third issue is that most studies have used identical methods (most commonly self-report questionnaires) to obtain data from both attachment security and internalizing difficulties (Brumariu & Kerns, 2010). It is preferable to use diverse methodological approaches when assessing relations between attachment and internalizing problems, as this will reduce the risk for inflated results due to common method variance (Brumariu & Kerns, 2010; Spector, 2006). Because only one review compared effect sizes on the internalizing spectrum, Madigan et al., (2016) have advocated, as a fourth issue, that future work should be aimed at unraveling the separate relations between attachment and depression and anxiety. Finally, to enable generalization of findings, it is important that investigations are large-scaled and well-powered (Groh et al., 2017).

The present thesis aims to shed light on all these issues by: 1) investigating longitudinal reciprocal relations between children's attachment security and internalizing symptomatology, 2) applying robust diagnostic interviews to determine children's levels of anxiety symptoms and depressive symptoms, 3) using a thoroughly validated self-report questionnaire to examine child-parent attachment, 4) assessing the separate pathways between attachment security and levels of anxiety and depression 5) in a large stratified community sample of children from Norway, where data are analyzed using stringent statistical procedures.

In addition to tackle important limitations in the attachment literature, the present thesis also focuses on an age period that has been under-investigated in developmental psychology: the middle childhood years. To the best of my knowledge, no other study has to date investigated bidirectional relations between attachment security and internalizing symptomatology in this age-period.

The Middle Childhood Years

Even though attachment figures remain important for individuals in all developmental periods (e.g., Bowlby, 1969/1982), research on relations between attachment insecurity and internalizing problems has largely focused on young children, adolescents and adults; leaving a relative lacuna of research in middle childhood (Boldt, Kochanska, Grekin, & Brock, 2016; Kerns, Schlegelmilch, Morgan, & Abraham, 2005; Raikes & Thompson, 2005). Indeed, middle childhood (ages 7 – 12 years; Kerns & Brumariu, 2016) has been referred to as "the forgotten years" in developmental research (Mah & Ford-Jones, 2012). Attachment in middle childhood has gathered somewhat greater research-attention in recent years, but studies on this age group is still in its formative years compared to other developmental periods (Brumariu, Madigan, Giuseppone, Movahed Abtahi, & Kerns, 2018; Kerns & Brumariu, 2016).

In spite of this relative scarcity of research, middle childhood is a period marked by several important developmental advancements - many of which are thought to have implications for both attachment security and children's probability of developing internalizing difficulties (Kerns & Brumariu, 2016, Waters, Bosmans, Vandevivere, Dujardin, & Waters, 2015). Not only do socio-cognitive and emotional advancements impact children's contemporary attachment security and mental health, but adjustments formed in this period are also thought to provide the foundation for problems emerging in adolescence (Bosmans & Kerns, 2015). This makes middle childhood studies on attachment development and its sequelae to have both long-lasting importance, both theoretically and clinically (Bosmans & Kerns, 2015). The following section elaborates on socio-emotional and cognitive advancements thought to be particularly influential for the formation of children's attachment security and internalizing symptomatology in middle childhood.

Socio-Emotional and Cognitive Advancement. During middle childhood, selective pruning (i.e., the process of discriminatory attenuation of some brain-areas and enhancement of others) is highly operative (Rappley & Kallman, 2009). As neural trajectories become more refined, long-lasting cognitive, emotional and social advances manifest (Thompson, 2016). One particularly important consequence of this, is the emergent capability for metacognitive

thinking (i.e., the ability to think about thinking) (Flavell, Miller, & Miller, 2002). Metacognitive abilities permit individuals to increasingly engage in conscious reflection about their own and others' psychological processes (e.g., motives, emotions and thoughts), and children this age demonstrate greater ability to grasp the concept of mixed emotions in themselves and others (Delius, Bovenschen, & Spangler, 2008; Raikes & Thompson, 2005). As will be elaborated in further detail below, metacognition enables new insights to motives behind parental conduct, which can impact children's perceptions of the care they receive and thereby impact attachment security (Raikes & Thompson, 2005). Metacognition also enables cognitive habits associated with the development and persistence of internalizing symptoms (Wells & Matthews, 1996). It is worth noting, however, that metacognitive advancements in middle childhood mainly concern children's conscious evaluative thoughts, and appear to have a smaller effect on children's ability for implicit-procedural reasoning (e.g., intuitive appraisals of self and others) (Zimmermann & Iwanski, 2015). Also, although children in middle childhood are capable of greater psychological insights than younger children, they still have relative poor abstract representational skills and self-reflection capability compared to adolescents (Harter, 1988; Raikes & Thompson, 2005; Zimmermann & Iwanski, 2015). These possibilities and limitations should be taken into consideration when evaluating which types of measurement approaches might be appropriate for children this age.

Other important developmental advances in middle childhood include greater cognitive flexibility and improved abilities to organize knowledge conceptually (Rappley & Kallman, 2009). Children start demonstrating enhanced memory capacities and greater emotion-regulation skills with as they grow older (Raikes & Thompson, 2005). Upon becoming more aware of their own feelings and the external world, children in middle childhood also get better at distinguishing themselves from, and comparing themselves to others (Steele, 2015). As an extension of this, children start demonstrating accelerated social awareness and increased knowledge of social display rules; which, along with a better ability to control emotions, facilitate increased capacities to conceal feelings and a greater need for autonomy (Kerns & Brumariu, 2016). The increased ability to mask feelings is important because it reduces the probability that children's internalizing symptoms are detected by others (Saarni, Mumme, & Campos, 1998). Children's need for increased autonomy is important because it impacts the dynamics of the child-parent relationship, which ultimately, and dependent on how it is handled by both the parent and the child, could influence children's attachment security (Kerns & Brumariu, 2016). Increased cognitive complexity

brings with it a potential for perceptual habits that might trigger a potential for, or aggravate already present internalizing difficulties in children, which will be elaborated below.

Importantly, the enhancement of socio-emotional and cognitive skills appear to make children's IWM's become more elaborate and coherent, which is believed to gradually facilitate the integration of multiple IWMs into more generalized abstractions (Del Giudice, 2015; Kerns & Brumariu, 2016; Zimmermann & Iwanski, 2015). Consequently, with increasing age, attachment security appears to increasingly become a characteristic of the child, as opposed to being a characterization of specific attachment relationships (Psouni & Apetroaia, 2014; Raikes & Thompson, 2005). Due to the development of more sophisticated and generalized IWMs, as well as increased social awareness and psychological insights, questionnaires targeting children's conscious attachment-representations are thought to be particularly pertinent measurements for children in middle childhood (Bosmans & Kerns, 2015). Indeed, compared to preschoolers, children in middle childhood have developed more realistic views of social relationships, equipping them with a more realistic understanding of their attachment relationships (Stipek & Iver, 1989). In addition, because children tend to be concrete-thinkers, they are likely to report experiences with a higher accuracy than adolescents (Bosmans & Kerns, 2015). No inventory has gathered the status as a "gold standard" for measuring attachment in middle childhood (Brumariu et al., 2018). However, given its' status as the best validated attachment questionnaire for children in middle childhood (Bosmans & Kerns, 2015), Security Scale (Kerns, Klepac, & Cole, 1996), is the attachment measure applied in the present study.

Although maturation continues to confer cognitive improvements in middle childhood, the way in which selective pruning unfolds is heavily influenced by experiences, including children's daily interactions with parents (Mah & Ford-Jones, 2012). To better understand the potential relations between children's attachment to parents and internalizing symptomatology in middle childhood, it is important to recognize typical features of healthy and less healthy child-parent attachment relationship in this period. The following section therefore elaborates on hallmarks of child-parent attachment in middle childhood. Potential implications for and by internalizing symptomatology are attended to further below.

Hallmarks of the Child-Parent Attachment Relationship. Several hallmarks of child-parent attachment in middle childhood has been identified, contributing to distinguish this period from earlier childhood years and adolescence (Kerns & Brumariu, 2016). One characteristic for children this age is that parents continue to function as the principal attachment figures, even though children start spending increasingly more time away from

home (Kerns & Brumariu, 2016; Raikes & Thompson, 2005). Children in middle childhood largely report to favor peers as playmates (e. g., Kerns, Tomich, & Kim, 2006), but when asked about situations likely to invoke attachment needs (e.g., when feeling afraid, stressed, ill or sad), children still show a clear preference for parents over peers (Kerns et al., 2006; Kobak, Rosenthal, & Serwik, 2005; Seibert & Kerns, 2009). Indeed, children who rather rely on their peers to fulfill attachment needs appear to be at greater risk for developing internalizing difficulties (Allen, 2016).

Another characteristic of attachment relationships in middle childhood is a shift in the goal of the attachment system, where caregiver-availability replaces children's former need for caregiver-proximity (Ainsworth, 1990; Mayseless, 2005). As children grow older, they gradually become content with longer separations from attachment figures, given that the child knows that it is possible to make contact with, and reunite with the parent if needed (e.g., following an injury) (Kerns & Brumariu, 2016). This shift is believed to result from children's cognitive and emotional advancements (e.g., enhanced memory, better regulation skills) (Mah & Ford-Jones, 2012; Raikes & Thompson, 2005), and partly because of external expectations regarding greater child autonomy (i.e. social display rules) (Kerns & Brumariu, 2016).

In addition to continue using parents as safe havens in times of distress, children also continue to use parents as secure bases for exploration in middle childhood (Bosmans & Kerns, 2015; Kerns & Brumariu, 2016). However, as children grow older, they become more self-reliant and express a need for greater autonomy from their parents (Raikes & Thompson, 2005). Secure attachment in middle childhood is therefore associated with children's perceptions of parents as both supportive of child-autonomy and lower levels of parental psychological control (Bosmans, Braet, Koster, & Raedt, 2009; Kerns, Brumariu, et al., 2011). Although still relying on the wiser and stronger caregiver, children in middle childhood start viewing their parents as resources and collaborators rather than as authorities responsible for solving their problems (Kerns, Aspelmeier, Gentzler, & Grabill, 2001; Kerns & Brumariu, 2016). Parents who correspondingly show confidence in the child's capacity to tackle challenges facilitate children's evolving independence, which ultimately prepare the child to cope on his or her own (Cobb, 1996; Kerns, Brumariu, et al., 2011). Another aspect of coregulation in middle childhood is that children take increased responsibility for the daily communication with their parents (Kerns & Brumariu, 2016), and more securely attached children have been found to inform parents more often about their whereabouts and (change of) plans than less secure children (Kerns et al., 2001).

Taken together, sensitive, responsive and accepting parenting has been identified as important contributors to secure child attachment in middle childhood. Parents continue to function as children's principal attachment figures, serving as both safe havens in times of stress and as secure bases for children's exploration - even though children's former need for parent-proximity gradually become replaced by a need for parent-availability. Secure-base contact between parents and children also takes on a more collaborative aspect, and the degree to which child-caregiver dyads manage to balance and coordinate needs for care with needs for exploration therefore become a marker of secure attachment in middle childhood (Cobb, 1996; Grossmann, Grossmann, & Kindler, 2005; Kerns, Mathews, Koehn, Williams, & Siener-Ciesla, 2015).

Stability and Change in Attachment Security. Evidently, the present study's aim: to examine bidirectional relations between attachment and internalizing symptomatology in middle childhood, relies on the assumption that attachment security can be modified or changed in this developmental period. Bowlby (1973, 1980) posited that, because children gradually habituate to their social worlds, IWMs become increasingly resistant to change with age. In light of Bowlby's claims, one would expect attachment security to gradually become more stable during middle childhood. Yet, the reorganizations of IWMs into more sophisticated and generalized versions presupposes that IWMs remain at least relatively malleable in this period (Bosmans & Kerns, 2015). Research on stability in (behavioral measures of) attachment security from infancy and early childhood to (representational measures of) attachment security in middle childhood have yielded mixed findings, with some studies reporting continuity in attachment security over the course of childhood and others not finding any continuity (see Kerns & Brumariu, 2016 for an overview). Although different measurement approaches might account for some of the variability in these findings, stability in attachment security from birth to late childhood appear is low (Groh et al., 2014; Kerns & Brumariu, 2016). Stability estimates of attachment during middle childhood also have a mixed character, but the overall trend is that attachment security gradually become more stable in this period (Groh et al., 2014; Kerns & Brumariu, 2016). A review comparing five attachment-studies using Security Scale reported that stability of attachment security was moderate ($r = .51$, $n = 239$) during a two-year period in later middle childhood (Brumariu et al., 2018).

In sum, research has generally supported Bowlby's idea that attachment security appears to become gradually more resistant to change during childhood, indicating that IWMs become less malleable as children grow older (Allen, 2016; Allen et al., 2004; Kerns &

Brumariu, 2016). At the same time IWMs belonging to children in middle childhood do not appear to yet serve as cognitive diathesis that strongly alters responses to context, as they increasingly tend to do in adolescence (Fearon et al., 2016; Raikes & Thompson, 2005; Zimmermann & Becker-Stoll, 2002). However, stability have a mixed character.

   Promoters of Stability in Attachment Security. As humans have an inborn need to perceive circumstances as coherent and predictable, children possess cognitive biases that help them render internal and external experiences orderly and meaningful (Hogg & Vaughan, 2011, p. 80). Indeed, in the scenario where IWMs were to change easily, children would develop confused understandings of their social worlds, resulting in an overwhelming cognitive load and psychological suffering (Bretherton & Munholland, 2008). Cognitive biases, which are based on pervious care-experiences, protect children from such chaos by assimilating ongoing attachment-relevant information in ways resembling preexisting expectations (i.e. IWMs), and this promotes stability in attachment security (Bosmans & Kerns, 2015). In the case of securely attached children, IWMs thus typically remain secure over time **-** as long as the child's expectations of being met with responsive and sensitive care generally are followed by confirming experiences (Bosmans & Kerns, 2015). Similarly, less secure children tend to interpret ambiguous parental behavior as rejecting even if the same behavior could have been interpreted as supportive, whish reinforces insecure children's initial perceptions of parents as less sensitive and responsive (De Winter, Bosmans, & Salemink, 2014). Moreover, a study found that less secure children in middle childhood tended to remember more negative interactions with parents at the expense of remembering positive interactions, whereas the reverse tendency was reported for securely attached individuals (Dujardin, Bosmans, Braet, & Goossens, 2014). As such, in the absence of substantial changes in the caregiving-environment, children are generally inclined to sustain their attachment models of parents over time, even when parents occasionally fail to perform according to their usual caregiving-patterns (Bretherton & Munholland, 2008).

   Promoters of Change in Attachment Security. Although trust-related information processing biases promote stability in attachment security, there are also conditions under which attachment can change in middle childhood (Booth-LaForce et al., 2014; Del Giudice, 2015). If life-experiences recurrently conflict with preexisting ideas, the easiest way to regain a coherent world-view can sometimes be by change of old convictions (Hogg & Vaughan, 2011, p. 60). Hence, children who experience persistent changes in parental sensitivity or availability will over time become inclined to adjust their IWMs accordingly, reflected by changes in attachment security (Fearon et al., 2016). Studies have identified attachment-

related negative life events, such as maternal depression, as risk-factors for developing less secure attachment, suggesting that mothers' prolonged cognitive strain could interfere with her capability of providing a safe haven and secure base for the child (Waters, Weinfield, & Hamilton, 2000; Weinfield, Sroufe, & Egeland, 2000). Conversely, improved life circumstances followed by enhanced caregiving quality is expected to modify security in a positive direction (Booth-LaForce et al., 2014; Fearon et al., 2016).

Children's socio-cognitive and emotional development, along with changed social expectations in middle childhood, necessitates adjustments in the scope of secure base support by parents (Kerns & Brumariu, 2016). One example of this, is that sensitive caregiving increasingly involves permitting greater child-autonomy in middle childhood (Raikes & Thompson, 2005). Parents who fail to provide sufficient autonomy in this period might gradually lose their role as secure bases for children, which enhances children's probability for becoming less securely attached (Kerns & Brumariu, 2016). It is also possible that the mere advancement of children's socio-cognitive and emotional capabilities can contribute to changes in children's levels of security (Raikes & Thompson, 2005). Greater awareness of social dynamics, for example, can lead children to increasingly compare their own parents to those of others, and start viewing their parents in a different light (Kerns & Brumariu, 2016). On top of this, children's improved psychological insights enables new understandings of motives behind parental conduct, which can cause reevaluations of caregiving experiences and changes in attachment security (Raikes & Thompson, 2005).

Hence, although children are inclined to keep established IWMs, parents' ability to adapt to the developing child's changing needs putatively impacts the degree of stability of attachment security in middle childhood (Allen et al., 2004; Kerns & Brumariu, 2016). The degree of stability of attachment (in)security might have subsequent implications for the child's risk for developing internalizing symptoms (Waters et al., 2015). At the same time, symptoms of anxiety and depression represent sources of change that influences children's attachment-needs and thereby might alter children's attachment security (Allen et al., 2004).

The present study provides longitudinal data, which allows it to report on the stability of attachment security from ages 10 – 12 years. So far as I know, this is the first high-powered study to provide such an estimate based on a representative sample of children. As an attempt to better understand the relations between attachment security and the various types of internalizing difficulties, this study also assesses relations between attachment security and the separate symptoms of anxiety and depression, as recommended by Madigan et al., (2016). Due to the vast changes occurring both at the intrapersonal level and in the child-parent

relationship in middle childhood, it is important to map the degree of stability of attachment security in this period, as this might have implications for the interplay between attachment security and symptoms of depression and anxiety.

Attachment and Internalizing Symptomatology

Despite sharing the communality of being covert and inner-directed (Brumariu & Kerns, 2010), there are several features distinguishing symptoms of depression and anxiety (Madigan et al., 2016). To ensure a proper investigation of how attachment security might relate to both anxiety and depressive symptoms, the following section therefore illuminates the potential interplay between attachment and these types of symptoms separately, starting with depressive symptoms.

Depressive symptoms and Attachment Security. According to the Diagnostic and Statistical Manual of Mental Disorders, 4th edition, Text Revision (DSM-IV-TR) (American Psychiatric Association, 2000), depressive symptoms in children include: Feelings of sadness or irritability - usually accompanied by loss of interests or pleasure, a sense of worthlessness or guilt (including guilty preoccupations or ruminations over minor past failings) in addition to decreased energy, impaired executive functions, sleep disturbances, abnormal appetite, psychomotor changes and thoughts of death. Bowlby (1980) suggested that symptoms of depression result from insecure attachment through experiences of loss; including loss understood as parent's psychological unavailability. Such losses, Bowlby argued, promotes IWMs of the self as worthless, and these IWMs tend to be carried out and further reinforced through subsequent "losses" (e.g., continued parental rejection or unavailability) fueling depressive symptomatology. In support of these ideas, research has shown that children perceiving others as unloving and themselves as unworthy of being loved are more vulnerable to developing depressogenic inferential styles (where negative outcomes are attributed to internal, global and stable factors), which contribute to maintenance of depressive symptomatology (Abela & Hankin, 2009; Kerig, Ludlow, & Wenar, 2012, p. 303-305).

Because many insecure children have learned that authentic expression of feelings frequently is rejected by parents, some learn to compensate by overregulating their display of emotions and develop less optimal coping strategies, such as rumination (Casey, 1996; Ebata & Moos, 1991; Hammen & Rudolph, 2003; Silk, Steinberg, & Morris, 2003; Southam-Gerow & Kendall, 2002). Rumination, defined as passively and repetitively focusing on causes and consequences of distress without engaging in active coping or problem solving (Nolen-Hoeksema, 1991), appear to increase the overall rate of depressive symptoms in middle childhood (Broderick & Korteland, 2004). Because ruminative coping requires rather

sophisticated cognitive abilities, including metacognitive abilities and prolonged concentration and memory (Wells & Matthews, 1996), this strategy becomes increasingly relevant as a way of tackling rejected attachment needs towards adolescence. Also, because IWMs appear to gradually become generalized in this period, insecure children, who do not trust parents to be reliably available, become more likely to start perceiving the motives of other humans in a negatively biased manner too (Brumariu, Kerns, & Seibert, 2012; Dykas & Cassidy, 2011). One implication of these largely automatic mechanisms, is that insecurely attached children systematically might start perceiving ambiguous or neutral signals from others as discouragement and rejection (Scher, Ingram, & Segal, 2005). This can in turn reinforce views of others as unloving and of the self as unworthy and thus further fuel thought patterns associated with depressive symptom.

In addition to theorizing that insecure attachment can lead to depression, Bowlby (1973, 1980) also provided a rationale for how depressive problems might predict less secure attachment. Bowlby argued that whenever prolonged and severe distress triggers strong emotions that cannot readily be calmed by parents, children may eventually cease to perceive parents as safe havens and start developing less secure attachment (Allen et al., 2004). Depressive symptoms, with the hopelessness and despair they embody, can indeed trigger strong attachment needs that are difficult to soothe (Allen et al., 2004). In addition, and perhaps not completely independently of the fact that strong attachment needs cannot always be readily accommodated by others, children with depressive symptoms also tend to withdraw from interpersonal relationships (APA, 2000) and hide their true thoughts and feelings from parents (Allen, 2016). Put differently, children with depressive symptoms might become less inclined to seek out their parents as secure bases and safe havens, which enhances the probability of developing less secure attachment.

Taken together, insecurely attached children with perceptions of parents as rejective are thought to be more susceptible to development of depressive symptoms in middle childhood. Due to socio-cognitive and emotional maturation; including increased capacity for masking feelings and a potential for developing ruminative habits, this susceptibility is thought to become greater for insecurely attached children towards the end of middle childhood. There are also reasons for expecting depressive symptoms to foster less secure attachment in middle childhood. It might, for example, be difficult for parents to provide immediate relief from children's depressive symptoms, which in turn may compromise parent's ability to serve as safe havens for the child. Children with depressive symptoms also tend to lose interest in previously enjoyable activities and rely less on parents as sources of

support, which could impact their ability to use parents as secure bases. Together, this gives reason to expect a bidirectional relation between depressive symptoms and less secure attachment in middle childhood. Whereas the prospective relationship between insecure attachment and depressive symptoms has been thoroughly investigated in childhood and adolescence, no studies have, to the best of my knowledge, tested a potential prospective relation between children's depressive symptoms and less secure attachment. However, one study have investigated depressive symptoms as predictors for less secure attachment in adolescence, with findings that depressive symptoms predicted relative decreases in attachment security from ages 16 to 18 years (see Allen et al., 2004).

Anxiety Symptoms and Attachment Security. Anxiety symptoms in children as defined by DSM-IV, are configured in various ways. Some symptoms relate to specific environmental triggers (e.g. most of the symptoms constituting specific phobias and separation anxiety) whereas others are more thorough and comprehensive across situations (e.g., symptoms of generalized anxiety disorder) (APA, 2000). The common denominator for anxiety disorders is intense worry or fear, often followed by avoidance of the anxiety-provoking stimuli (APA, 2000). Bowlby (1973) asserted that children's concerns regarding parent-availability constitute the basis for anxiety. He theorized that whenever children's attempts to forecast parental availability fail **-** particularly during physical separations or in distressing situations, children often respond with fear and anxiety (Bowlby, 1973). Because children are inclined to rely on someone wiser and stronger as sources of protection in crises, Bowlby argued that uncertainties regarding parental availability can lead to perceptions of the world as unpredictable and dangerous, which in turn can lower insecure children's threshold for feelings of anxiety.

Congruent with these claims, research has shown that the quality of child-parent relationships appear to play a role in both the onset and persistence of children's anxiety symptoms (Brumariu & Kerns, 2010; Vasey & Dadds, 2001). For example, insensitive parenting and unresponsiveness to worries expressed by anxious children (i.e., patterns associated with insecure attachment) has been found to increase the likelihood that anxiety symptoms persist and also increase over time (Dadds & Roth, 2001). Indeed, when parents insensitively forces children into fear-inducing situations or demeans worried children's behavior, parents fails to provide emotional support as safe havens and also burdens children with an additional source of distress (Vasey & Ollendick, 2001). Moreover, parents of children with anxiety-symptoms have been identified as more likely to demonstrate overcontrolling behavior (i.e., less supportive of child-autonomy) (Brumariu & Kerns, 2010;

Kerig et al., 2012, p. 285; Vasey & Dadds, 2001). Paradoxically, by attempting to solve problems for the child, overcontrolling parents instead risk interfering with the child's development of perceived competence in their ability to solve problems independently, which prevents children from mastering tasks and nourishes anxiety symptoms (Dadds & Roth, 2001; Kerig et al., 2012, p. 285). Overcontrolling parenting also contrasts with the normative pattern of secure attachment relationships in middle childhood, where greater child independence is key, and where parental sensitivity increasingly includes taking children's thoughts and opinions into consideration.

It should be kept in mind that child-parent attachment relationships are not solely determined by parental responses. Rather, the transactional model emphasizes that attachment relationships are interdependent, and that children's behaviors contribute to shaping attachment relationships by eliciting certain behavioral responses in parents (Biringen, Derscheid, Vliegen, Closson, & Easterbrooks, 2014; Sameroff, 2009). Because children with anxiety-symptoms tend to perceive the world as dangerous, often in combination with low confidence in their own ability to tackle threats, these children also have a higher-than-average motivation for seeking out parents as sources of protection (Brumariu & Kerns, 2010). In return, and given that parents are sensitive to their child's attachment needs, parents often responds with protective behavior (Vasey & Ollendick, 2001). Driven by a wish to protect children from experiencing intense fear, sensitive parents often yearn to yield immediate relief from children's expressed symptoms of anxiety (Ollendick, Vasey, King, Vasey, & Dadds, 2001). Since the easiest way to provide instant symptom relief is by avoiding the feared stimuli, many parents develop behavioral habits that reinforces anxious children's tendency toward avoidance (Kerig et al., 2012, p. 286-288). Avoidance does indeed contribute to short-time reduction of children's anxiety symptoms (Kerig et al., 2012, p. 285) but also appears to nourish fearful responding and dependence in the long run (Chorpita & Barlow, 1998; Dadds & Roth, 2001; Thompson, 2001; Vasey & MacLeod, 2001; Weems & Silverman, 2006).

Like depressive symptoms, severe anxiety-symptoms can also be perceived as overwhelming and intolerable by the child (Kerig et al., 2012, p. 283). It is therefore possible that a high level of anxiety symptoms can qualify as stressors capable of triggering attachment needs that parents struggle to accommodate, which ultimately could lead to less secure attachment. Indeed, by triggering overprotective behavior in sensitive parents, children with anxiety symptoms risk being aided towards habits of avoidance, which, perhaps, could

escalate into more severe anxiety symptoms that are difficult to handle by parents and thus ultimately lead to less secure attachment.

Taken together, Bowlby proposed that children who perceive parents to be unpredictably available are prone to perceiving the world as unsafe and thereby develop symptoms of anxiety. Research has favored this suggestion through findings indicating parental insensitivity and infrequent responsiveness to increase the likelihood of the onset and sustenance of children's anxiety symptoms. Contrarywise, it is possible that children with higher levels of anxiety-symptoms have a greater risk of becoming less securely attached to parents. Following the same logic as with depressive symptoms, anxiety symptoms might trigger strong attachment needs that parents might fail to properly accommodate as safe havens. Parents sensitive to children's attachment cues also risk developing overprotective habits that facilitates child-avoidance to anxiety-provoking stimuli. Avoidance might contribute to escalating anxiety symptoms to escalate to the point where they are perceived as overwhelming by the child and difficult to soothe be the parent, thus lead to less secure child-attachment.

To the best of my knowledge, there are at present no investigations of bidirectional associations between anxiety symptoms and children's attachment security. A search through the attachment literature, returned only one study that appeared to have investigated the path from anxiety symptoms to attachment security (with teens, aged from 13.5 years to 16.5 years) (see Buist, Deković, Meeus, & van Aken, 2004). Data were conducted at two time-points and results were mixed: significant prospective relations were reported after the first year, but not after the second year. At any rate, these results should be interpreted with caution. After all, anxiety symptoms were examined superficially: adolescents responded to only five questions in total, these questions were aimed at addressing both anxiety-symptoms and other behavioral problems.

Aims of the Present Study

The work presented herein addresses important gaps in the attachment-psychopathology literature, namely directions and possible bidirectional effects between attachment (in)security, and symptoms of anxiety and depression in late middle childhood. Given that less secure attachment and internalizing difficulties are associated with cognitive, behavioral and emotional impairments, and that problems from middle childhood often track to adolescence and adulthood (Steele, 2015), it is important to identify modifiable risk factors that might inform therapeutic interventions (Brumariu & Kerns, 2010).

In line with Bowlby's reasoning, I put forth the hypothesis that higher attachment insecurity at age 10 will lead to increased symptoms of anxiety and depression at age 12 (adjusted for baseline levels of anxiety and depression). I also hypothesize that higher levels of anxiety and depressive symptoms at age 10 will predict higher levels of insecure attachment at age 12 (adjusted for baseline levels of attachment security). I thus expect a reciprocal pattern to emerge between attachment insecurity and levels of internalizing symptoms. Lastly, I hypothesize that attachment security will be moderately stable from ages 10 to 12 years.

Method

Participants and Procedure

A letter of invitation to participate in the Trondheim Early Secure Study (TESS; Wichstrøm et al., 2012) was sent to all parents with children of the 2003 and 2004 birth cohorts living in Trondheim, Norway ($N = 3456$). Included in the letter was the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). Parents were asked to complete this questionnaire to map their children's emotional and behavioral problems and to bring the completed SDQ when attending the regular health check-up for 4-year-olds ($n = 3016$). After receiving information about the study from the health nurse, 2475 families (82%) gave their written informed consent to participate. Due to lacking proficiency in Norwegian, 176 families were not considered eligible to participate, and 166 families were erroneously not offered participation at the health check-up. A total of 1250 children were drawn to participate, and 997 children ($M_{age} = 4.7$ years, $SD = 0.30$; 52% female) were tested at the time of study enrollment (T1). The majority of parents (91 % mothers, 93% fathers) were of Norwegian origin, and parent's level of education was representative of the Norwegian population ("Education Attainment of the Population," 2012). Sample characteristics are presented in Table 1, and a flowchart describing participation-rates and the sample recruitment procedure is depicted in Figure 1, both are attached in the appendix.

Based on their SDQ-scores, children were allocated into four strata (cut-offs: 0–4, 5–8, 9–11, and 12–40), and the probability of selection increased with increasing scores (.37, .48, .70, and .89 in the four strata, respectively). This deliberate overrepresentation of children with higher SDQ-scores was arranged to increase sample variability and thus statistical power, as one of the primary aims of TESS was to investigate the prevalence of psychiatric disorders in preschoolers (Wichstrøm et al., 2012; see also Steinsbekk & Wichstrøm, 2018). Notably, and as described in further detail below, the statistical analyses have accounted for this overrepresentation to ensure accurate population estimates.

The present thesis is based on TESS-data collected when the participants were 10 years (T4; M_{age}=10.51 years, SD=.17) and 12 years (T5; M_{age}=12.50 years, SD=.14). Analyses revealed that attrition at T5 was not predicted by any of the study variables, nor was attrition predicted by children's gender or socioeconomical status. All procedures have been approved by the Regional Committee for Medical and Health Research Ethics in Mid-Norway (approval number: 2009/994; title of the study: The Trondheim Early Secure Study).

Measures

Attachment Security. Children's attachment security was measured by the Norwegian version of Security Scale, which is a 15-item self-report questionnaire: (Kerns et al., 1996). Security Scale taps the degree to which children believe that a parent is responsive and available, open to communication, and a reliable source of help and comfort in times of stress. All items are structured using Harter's (1982) "Some kids…Other kids…" format, with the intention of reducing social desirability bias (Kerns et al., 2005). The participants read statements about two kinds of children, e.g., "*some kids find it easy to trust their mom (dad) …but… other kids are not sure if they can trust their mom (dad)*". Subsequently, children selected which of the two kids they perceived themselves as more similar to and reported the strength of endorsement for the statements ("really true" or "sort of true"). Coding involves rating each of the 15 items on a 4-point scale (see Kerns et al., 1996). The scores are averaged across all items, resulting in a continuous score of overall security, where higher scores indicate higher attachment security (Kerns, Tomich, Aspelmeier, & Contreras, 2000). Notably, Security Scale is relation-specific, meaning that children report perceived attachment-security to only one of their parents. The participants of TESS were told to focus on the parent who brought them to the current session when filling out Security Scale.

Security Scale has previously demonstrated overall adequate internal consistency (r=.64 - .93) across both low-risk and high-risk samples of children aged 8 – 12 years, (Kerns et al., 1996; Kerns et al., 2000; Lieberman, Doyle, & Markiewicz, 1999). Security Scale has also shown relations with other aspects putatively related to attachment security, including children's emotional competence, school adaptation, peer social competence and self-esteem and parental sensitivity (Brumariu et al., 2018). Security Scale scores had an adequate internal consistency in the present study (Cronbach's a = .77).

Anxiety and Depression. Symptoms of anxiety and depression were measured at ages 10 (T4) and 12 (T5), with the Child and Adolescent Psychiatric Assessment (CAPA) (Angold & Costello, 2000). CAPA is a semi-structured psychiatric interview that assesses children's mental health according to symptoms defined by the DSM-IV (American Psychiatric

Association, 2000). The interview is directed by a structured protocol including mandatory and discretionary probes. This means that questions are asked until the interviewer has sufficient information to decide whether symptoms are present at a predetermined level of severity. In this present study, trained personnel ($n = 9$) with extensive work experience with families and with least a bachelor's degree in a relevant field (i.e., psychologists, health nurses, social workers, day care teachers) conducted the interview, and children and their parents were questioned separately. According to standard procedure (Angold & Costello, 1995, 2000), data from the parent and child interviews were combined using the "either-or" rule at the symptom level, meaning that symptoms were recorded as present if reported by either informant. Subsequent scale scores consisted of the total number of anxiety symptoms and depressive symptoms. The internalizing symptoms were measured continuously by symptom counts, encouraged by meta-analytic evidence suggesting that anxiety and mood-disorders might not be categorical in nature (Haslam, Holland, & Kuppens, 2012). The anxiety symptom score consisted of the combined sum of DSM-IV defined symptoms of separation anxiety, social anxiety, generalized anxiety and specific phobias (range: 0-20 symptoms), whereas the depressive symptom score entailed symptoms of major depression (range: 0-9 symptoms).

CAPA has demonstrated test-retest reliability comparable to that of other highly structured psychiatric interviews for preadolescents and adolescents and adults (Angold & Costello, 1995; Copeland, Shanahan, Costello, & Angold, 2009), and is considered qualified to discriminate clinical cases from nonclinical cases (Angold et al., 2012). To establish inter-rater reliabilities for this study, independent raters blind to all information about the families recoded audio-recordings of 15% of the CAPA interviews. Recoded inter-rater reliabilities from the CAPA interviews ranged from 0.86 to 0.90.

Results

Statistical analyses

To test bidirectional relations between attachment security, anxiety-symptoms and depressive symptoms, an auto-regressive cross-lagged analysis was applied within a structural equation modeling framework (SEM). The autoregressive paths reflect the unique stability of each variable, whereas the cross-lagged paths estimate relations between the separate variables over time. Variables were allowed to correlate cross-sectionally at both time points. Because symptoms of anxiety and depression are highly comorbid and show heterotypic continuity (i.e., symptoms of both disorders influence each other over time) in middle childhood (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003), the model also includes

prospective paths between anxiety and depression. The model was therefore saturated and fit the data completely (i.e., 0 degrees of freedom). The cross-lagged model tested is depicted in Figure 2.

Missing data were handled through a full information maximum likelihood procedure, which is resistant to moderate deviations from multivariate normality and provides robust standard errors (Enders, 2001). This implies that analyses were performed on all available data given that participants had registered values for the dependent variable on at least one time point, which generated an analysis sample of $n=709$.

Because TESS used a screen-stratified sample, the parameters in all analyses were weighted proportional to the inverse of the selection probability (i.e., children with low scores on the SDQ were weighted up, and children with high scores were weighted down). Weightings were performed to generate true population estimates. All analyses were done using Mplus version 7 (Muthén & Muthén, 1998-2013).

Figure 2

Illustration of the Prospective Paths of the Multivariate Model, Exploring Reciprocal Relations Between Children's Attachment Security and Symptoms of Anxiety and Depression
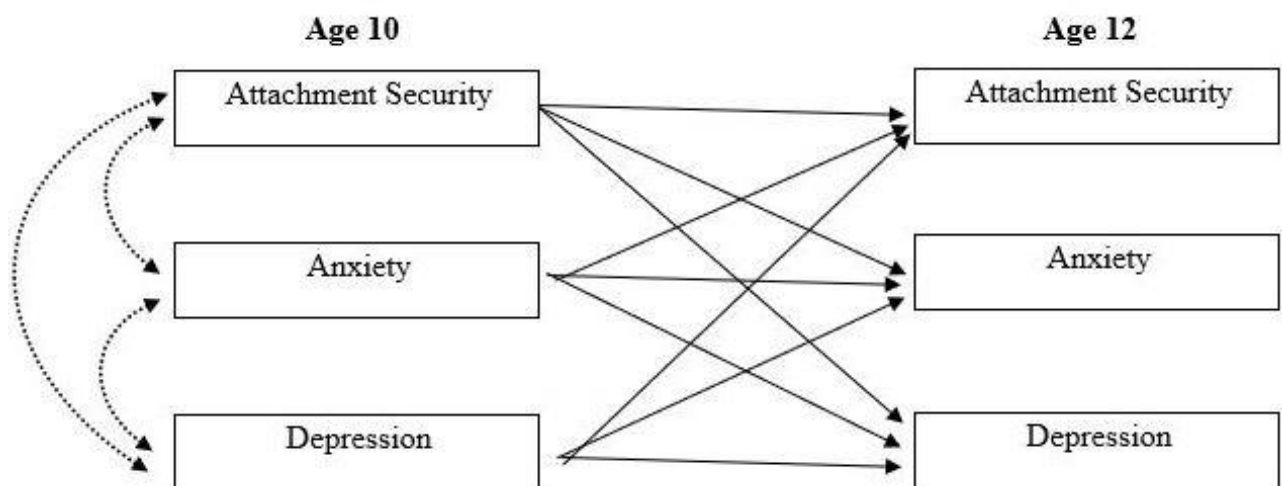
Descriptive Statistics and Correlations

As shown in Table 2, children demonstrated overall high levels of attachment security to parents at both ages 10 and 12, given that the minimum score according to Security Scale was 1 and the maximum score was 4. All internalizing symptom scores had a mean lower than 1, indicating very low overall scores of anxiety and depression in this sample, as the range of the anxiety-scale was 0 – 20, and the major depression scale ranged from 0 – 9. As can further

Table 2

Means and Correlation Coefficients Between Attachment Security and Symptom Scores of Anxiety and Depression

	Mean [95% CI]	Age 10			Age 12		
		AS	ANX	DEP	AS	ANX	DEP
Age 10							
AS	3.45 [3.42, 3.47]	1.00***	-.09*	-.12**	.51***	.02	.03
ANX	0.86 [.75, .95]	-.09*	1.00***	.50***	-.08*	.46***	.18***
DEP	0.30 [.25, .35]	-.12**	.50***	1.00***	-.17***	.39***	.28***
Age 12							
AS	3.41 [3.38, 3.45]	.51***	-.08*	-.17***	1.00***	-.08*	-.10**
ANX	0.76 [.63, .87]	.02	.46***	.39***	-.08*	1.00***	.55***
DEP	0.37 [.29, .87]	.03	.18***	.28***	-.10**	.55***	1.00***

Note: AS = Attachment Security; ANX = Anxiety; DEP = Depression. Correlation estimates = Pearson Correlation Coefficient

*p < .05 **p < .01 ***p < .001.

be seen in Table 2, attachment security and internalizing problems had a weak negative correlation at both assessment points. In addition, anxiety scores and depression scores at age 10 were weakly negatively associated with attachment security at age 12, but no associations were seen between attachment security at age 10 and internalizing symptoms at age 12.

Reciprocal Relations between Attachment Insecurity and Internalizing Symptomatology

The potential reciprocal relations between attachment security, anxiety-symptoms and depressive symptoms are displayed in Table 3. As can be seen, attachment security at age 10 did not predict anxiety or depressive symptoms at age 12, adjusted for baseline levels of internalizing symptoms. Regarding the opposite direction of influence, there was no significant path between anxiety symptoms at age 10 and attachment insecurity when the children were 12 years. However, higher levels of depressive symptoms at age 10 significantly predicted attachment insecurity at age 12, accounted for baseline levels of attachment security. Thus, no reciprocal patterns emerged between attachment security and levels of anxiety and depression. Stability in attachment security was moderately high over the two-year period, and anxiety-symptoms and depressive symptoms were moderately stable from age 10 to 12.

Table 3

Reciprocal Relations between Attachment Security, Anxiety-Symptoms and Depressive symptoms

	Age 12					
	Attachment Security		Anxiety		Depression	
Age 10	B (95 % CI)	β	B (95 % CI)	β	B (95 % CI)	β
Attachment Security	.51***	.49	.15	.04	.16	.06
	(.42, .59)		(-.15, .78)		(-.06, .38)	
Anxiety	.01	.02	.35***	.35	.04	.06
	(-.02, .03)		(.16, .45)		(.04, .12)	
Depression	-.07**	-.12	.51***	.23	.37***	.25
	(-.12, -.02)		(.25, .78)		(.19, .55)	

Note : *p < .05 **p < .01 ***p < .001.

Discussion

Although the role of attachment in the development of internalizing problems has been thoroughly investigated (see e.g., Groh et al., 2012; Madigan et al., 2016), the role of internalizing problems in the development of attachment has been largely neglected. In addition, these relations have been understudied in middle childhood, as has so many other developmental subjects. As an attempt to extend the literature, the objective of the present

thesis was therefore to investigate bidirectional relations between children's attachment security to parents and children's symptoms of anxiety and depression from ages 10 – 12 years, and to provide a stability-estimate of attachment in this period. To the best of my knowledge, this is the first study to examine reciprocal relations between attachment security and children's internalizing symptomatology in middle childhood. This is also, so far as I know, the first high-powered study to assess the stability of attachment security with a representative sample of children in middle childhood. By applying a diagnostic interview to assess internalizing symptomatology in a large representative sample while rigorously controlling for previous levels of internalizing behavior and attachment security, this study fills an important gap in the literature.

Contrary to the first study hypotheses, higher attachment insecurity at age 10 did not predict symptoms of anxiety or depression at age 12. This finding contradicts the general trend in the attachment literature of children and adolescents and contrasts with a key tenet of attachment theory. Nor did anxiety at age 10 did predict attachment security at age 12. However, as hypothesized, depressive symptoms at age 10 significantly predicted less secure attachment at age 12, and attachment security was moderately stable from age 10 to age 12.

Depressive Symptoms Predicted Less Secure Attachment

Symptoms of depression were found to predict less secure attachment over a two-year period in late middle childhood. One proposed explanation for this finding is that the strain of depressive symptoms can generate a stressor of such persistence and magnitude that it cannot be fully alleviated by parents. This may compromise parents' ability to serve as safe havens for their child, and lead children to develop less secure IWMs. In addition, children with depressive problems are prone to hold information-processing biases of others as rejective, of the self as worthless, and of their situation as hopeless (Harter, 2006, p. 304). Such perceptions typically foster negative anticipations that can contribute to further decrease children's motivation to use parents as sources of support.

Notably, perceptions of others as rejective and of the self as worthless resembles Bowlby's (1969, 1982) descriptions of IWM's belonging to less securely attached children. When considering that cognitive incongruencies may create psychological unease (Bretherton & Munholland, 2008) it is possible that development of less secure IWMs for children with depressive symptoms has the instant benefit of reducing such tension. Hence, children's striving towards cognitive coherence and control may be an aspect that contributes to reinforce development of less secure attachment in children with depressive symptoms.

According to the DSM-IV-TR, depressive symptoms nearly always include some degree of loss in interests or pleasure, typically reflected by diminished interest in hobbies and activities (APA, 2000). For children, these patterns are often accompanied by social withdrawal (APA, 2000). The combination of decreased interest in activities and a tendency to avoid social company might lead children with depressive difficulties not only to explore less, but to also decrease their use of parents as secure bases for exploration - which is a known risk-factor for less secure attachment (Kerns & Brumariu, 2016).

Another point worthy of consideration is that children who expect parents to reject attachment needs often come to perceive their own negative affect as threatening to the attachment relationship (Cassidy & Kobak, 1988). Consequently, children with depressive difficulties are at greater risk of developing less healthy coping strategies such as dysregulation (i.e., lacking capacity to control and calm negative emotions) and suppression (i.e., successfully minimizing or avoiding the experience of negative emotions) (Brenning, Soenens, Braet, & Bosmans, 2012; Dykas & Cassidy, 2011). The tendency to communicate emotions less accurately (either by exaggerating or hiding emotions from parents) make parents less aware of children's true feelings and needs, which in turn make parents less equipped to provide sensitive responses matching children's attachment needs (Allen, 2016). When adding the fact that children with depressive symptoms are more reluctant to share their thoughts openly (Allen, 2016), parents might end up having very limited access to the child's internal world. Persistent patterns of mismatch between children's attachment needs and the care provided by parents, typically lead children to perceive parents as insensitive and unresponsive to their needs, which is associated with development of less secure attachment (Allen 2004, Kerns & Brumariu, 2016).

Furthermore, depressive symptoms are associated with increased child irritability (APA, 2000) and more interpersonal conflict (Hammen, 2000; Hammen & Rudolph, 2003). Mothers of depressed children also appear, in general, to be more critical of children's expressed emotions (Silk et al., 2009). All things considered, it might be that elevated maternal criticism of children's displayed emotions partly is caused by mothers' lacking access to, and thereby lacking understanding of, the inner states and struggles of children with depressive symptoms. However, it should be noted that the relations between children's depressive symptoms and maternal criticism to expressed emotions rested on cross-sectional correlations, meaning that interpretations of causes and effects cannot be determined. Other explanations for this associations could be, for example, that maternal criticism to displayed child-emotions reinforces children's depressogenic thinking and withdrawal, or that

depressive symptoms and maternal criticism influences each other reciprocally, forming a positive feedback loop. While this should be acknowledged, one cannot rule out the possibility that patterns of conflict, irritability and rejection of children's expressed emotions interferes with parents' ability to provide care perceived as sensitive, responsive and warm by the child – and thereby make children with depressive symptoms vulnerable to developing less secure attachment.

Can this Finding be Applied to individuals at other Ages? To the best of my knowledge, the present study is the first to investigate the potential impact of depressive symptoms on attachment security in childhood. However, when considering the enormous developments that manifest from preschool to preadolescence, the findings reported herein cannot be presupposed to apply for younger children. Important differences separating children in middle childhood from preschool-aged children include, for example, that parental availability replaces children's former need for proximity. This means that the mere presence of parents stops functioning as a powerful way to alleviate children's tension in middle childhood. At the same time, children's increased ability to control emotions in middle childhood causes internalizing symptoms to be less overt at this age. Consequently, the opportunity of parents to serve as secure bases and safe havens for the child increasingly depends on the child's willingness to approach parents openly and honestly when their attachment system is activated in middle childhood. When considering that depressive symptoms are associated with decreased motivation for sharing genuine thoughts and feelings with parents, it is possible that depressive symptoms have greater implications for attachment security as the child matures. Obviously, these suggestions are purely speculative, and will remain so until potential reciprocal relations between attachment security and depressive symptoms have been thoroughly tested in samples with younger children.

As far as I am aware, the prospective association between depressive symptoms and less secure attachment has been examined only once in adolescence, in a study with teens from ages 16 to 18 years ($N = 101$) (see Allen, 2004). In accordance with the findings reported herein, adolescents' depressive symptoms at age 16 predicted less secure attachment at age 18, accounted for baseline effects of security at age 16. The magnitude of this relation was larger in adolescence ($\beta = -.25$, $p = .002$) than in middle childhood ($\beta = -.12$, $p < .01$). Together, these findings may suggest that depressive symptoms represent a risk for developing less secure attachment in childhood, and that this relation grows stronger with age. In order to establish whether this idea proves to be robust, future studies should also examine the same relations in the age period between 12 and 16 years.

Although depressive symptoms did predict less secure attachment in this study, it should be acknowledged that the size of the prospective relation was small. This demonstrates that attachment security ultimately is a multi-determinant outcome (Vaughn et al., 2016) and highlights the importance of considering depressive symptoms' influence on children's attachment security in the context of several developmental influences (Thompson, 2010)

Anxiety-Symptoms did not Predict Less Secure Attachment

This study did not confirm the hypothesis that higher levels of anxiety at age 10 would predict less secure attachment at age 12, adjusted for baseline levels of attachment. One reason for expecting this relation was the anticipation that severe anxiety-symptoms, like depressive symptoms, can trigger strong attachment needs that parents fail to adequately accommodate. However, it should not be forgotten that anxiety symptoms altogether are more strongly related to specific environmental triggers (e.g., frightening external stimuli, traumatic events or combat) than are depressive symptoms (APA, 2000; Madigan et al., 2016). Whereas relief from external fear-eliciting stimuli often can be obtained quite efficiently by use of distraction and avoidance (Vasey & Dadds, 2001), it is a more prolonged process to change children's automatized beliefs about their self and sense of worth (Harter, 2006). This entails that it might be easier for parents to successfully provide stress-relief and distraction from external anxiety-provoking triggers (e.g., assuring children that a rattling noise is created by an open window rather than an intruder) than to provide immediate relief from the more inner-directed psychological anguish associated with depressive symptoms (e.g., children's ruminative thoughts about worthlessness or extensive feelings of guilt). Thus, even if anxiety symptoms, like depressive symptoms, can be perceived as intense and overwhelming by the child, chances are that sensitive and responsive parents are better equipped to successfully calm symptoms of anxiety and thereby maintain their roles as safe havens for these children.

Another reason for expecting more symptoms of anxiety to predict less secure attachment in middle childhood, rested on the premise that children's anxiety symptoms often elicit overprotective behaviors in parents, given that parents are generally sensitive to the child's attachment cues (Kerig et al., 2012, p. 286-288; Vasey & Dadds, 2001). Although overprotective (i.e. avoidance-fostering) parent behaviors often reduce children's anxiety in the short term, the same behaviors tend to increase anxiety symptoms in the long term (Dadds & Roth, 2001; Vasey & Dadds, 2001). Because overprotective parenting can diminish children's belief in their own ability to tackle stress, these behaviors can also lead children to develop greater dependence on parents (Dadds & Roth, 2001). The relative lack of child autonomy, and the imbalance between children's need for care and their need for independent

exploration (where the need for care overshadows the need for exploration), contrasts with the normal patterns of secure attachment in middle childhood, marked by increased self-reliance and a reduced need for parental assistance (Bosmans & Kerns, 2015; Cobb, 1996; Grossmann et al., 2005; Kerns & Brumariu, 2016; Kerns et al., 2015; Vasey & Dadds, 2001). Indeed, a high dependence on parents instead bear a resemblance to secure-base patterns typically seen for younger children (Kerns et al., 2016).

Although overprotective care neither reduces children's anxiety symptoms nor prepare children to cope on their own, it is not certain that parent-facilitated avoidance of anxiety-provoking stimuli interferes with parents' ability to serve as safe havens for the child, provided that children's anxiety symptoms become immediately attenuated (Dadds & Roth, 2001; Ollendick et al., 2001). In fact, the experience that parents pick up on anxious behavior (i.e., are *sensitive*) and provide responses that reduces children's tension (i.e., acknowledge and *accept* children's troubles and *respond* to them), resembles IWMs associated with secure attachment in middle childhood (Bosmans et al., 2009; Kerns et al., 2001). As such, it might be possible that the safe haven aspect of overprotective parenting yield sufficient compensation for the suboptimal attachment-outcomes associated with the less efficient use of parents as secure bases. Because distinguishing parent's roles as secure bases and safe havens seems important in the understanding of relations between children's attachment security and anxiety symptoms, it must be assured that both aspects are sufficiently represented in children's attachment score in the present study.

Measuring Attachment Security using Security Scale. Security Scale is designed to map three features that Bowlby (1987, as cited in Ainsworth, 1990, p. 474) identified as important indicators of attachment security in middle childhood: 1) the degree to which children rely on the parent during times of stress, 2) the degree to which children perceive their parent as responsive and available, 3) the degree to which children have an interest and ease in communicating with the parent. At first glance, these features appear to cover the essential features of attachment security in middle childhood. However, a closer look at Security Scale's scoring system reveals that attachment security might not be as thoroughly investigated as first hoped. Most notably, attachment-scores from the first topic (i.e., the degree to which children rely on the parent during times of stress) do not appear to reflect the aspect of greater child-autonomy and self-reliance as part of secure attachment in middle childhood. As a result, Security Scale appears to not be very fit to separate children following normative development of secure attachment from children showing signs of overdependence on parents (which is a pronounced risk among children with anxiety symptoms (e.g., Dadds &

Roth, 2001)). For instance, one statement in the inventory goes: *Some children do not need their mom/dad a lot* …but… *other children do need their mom/dad a lot.* Children who reported needing their mother or father a lot and additionally stated this to be "very true", obtained the highest score possible on this question (4 points) indicating high attachment security. In this case, it is likely that children who depend excessively on parents would gain a full score, whereas more autonomous children could end up giving a more nuanced response (e.g., report it as "sort of true" that they need their mom/dad a lot, or reporting that they do not need their mom/dad a lot). Another example is the statement: *Some children have it better when their mom/dad is near*…but… *other children do not have it better when their mom/dad is near.* In this case, children who reported feeling better when parents are near, and reported this to be "very true", obtained the maximum security-score (4 points). Like in the previous example, this statement also creates the possibility that children with excessive dependence on parents would obtain a higher attachment score than securely attached children who do not view parent's presence as a prerequisite for thriving. In fact, a full score on the latter statement might be interpreted as conflicting with a hallmark of secure attachment middle childhood: namely, the tendency that children's former need for parental proximity is replaced by a need for parental availability in this period (Ainsworth, 1990; Kerns & Brumariu, 2016; Mayseless, 2005). Moreover, the answer yielding the lowest score possible (i.e. "*other children do not have it better when their mom/dad is near*" and "*really true for me*" (1 point)) may as well be interpreted as a child's way of communicating that the company of parents is no longer preferred over the company of peers, which is a common tendency among securely attached children this age (Kerns & Brumariu, 2016). After all, reporting that parents' presence does not enhance the capability for thriving is not the same as reporting that the presence of parents creates *less* well-being.

  Hence, although Security Scale has been acknowledged as a well validated attachment measure for children aged 8 – 12 years (Bosmans & Kerns, 2015; Brumariu et al., 2018), this inventory does not seem to have taken into account the importance of increased child-autonomy as part of secure attachment in this period. This might compromise the inventory's ability to detect nuances that might prove important in a potential relationship between anxiety symptoms and attachment security. Because overdependence on parents might have been mistaken for high attachment security on certain statement-scores, chances are that scores motivated by overdependence may have cancelled out potential lower scores from elsewhere in the scale, and thus masked potential effects between anxiety symptoms and less secure attachment. The different tendencies of increased dependence (associated with anxiety

symptoms) and increased withdrawal (associated with depressive symptoms) illustrates that the discussed methodological vulnerability with Security Scale appear to primarily be of relevance for assessing the link between attachment security symptoms of anxiety, rather than depressive symptoms. In fact, elevated levels of anxiety in response to parental absence is an essential feature of Separation Anxiety Disorder (APA, 2000), which is one of the four diagnoses constituting the sum-score of anxiety symptoms in the present study. This might indeed increase the probability that children with anxiety-symptoms have reported that they *"...do have it better when their mom/dad is near", "…do need their mom/dad a lot",* which is coded as high attachment security.

Less Secure Attachment did not Predict Symptoms of Anxiety and Depression

Surprisingly, lower levels of attachment security at age 10 did not predict higher levels of anxiety symptoms or depressive symptoms in children at age 12, adjusted for baseline symptom levels of anxiety and depression. This finding contradicts Bowlby's (1969, 1973, 1980) postulations and conflicts with empirical trends in the middle childhood attachment-psychopathology literature (Kerns & Brumariu, 2016). These null-findings also contrast with conclusions from a literature review (Brumariu & Kerns, 2010) and two meta-studies (Groh et al., 2012; Madigan et al., 2016). The following sections will shed light on aspects that might be of importance for understanding why no such pattern appeared.

Low-Risk Sample. The TESS uses a community sample (i.e. a low-risk sample). Accordingly, children demonstrated high scores on attachment security and low scores on internalizing symptoms at both times of assessment, and scores were largely homogenous across children. Low variability of scores, in turn, leaves room for only small potential effect-sizes, which makes detection of potential associations more difficult. However, according to the meta-study from Madigan et al., (2016), associations between attachment security and internalizing symptoms appeared to generally be *larger* in low-risk samples with white children characterized as having no family risk and middle to upper socioeconomic status. As these characteristics closely resemble those in the TESS-sample, the present null-findings should indeed be handled with care. Having said that, the attachment-internalizing literature has a mixed character, with a great variation of study-designs, sample sizes and findings. To better understand the apparent inconsistencies between meta-analytic claims and the null-findings reported herein, it might therefore be helpful to examine some methodological aspects.

Methodological Aspects. One potential risk of allowing only two types of measurements in a review is that several studies might end up using similar methods to gather

all data. Indeed, in the meta-analysis by Madigan et al., (2016), most included studies (60%) used data from self-reports to determine both attachment security and behavioral (internalizing or externalizing) symptoms. Because common method variance can confound results (Spector, 2006), it is possible that this tendency have contributed to inflate the overall associations in the meta-study. The risk of inflated results is further enhanced when the method used to gather all data is self-report questionnaires, and when the data additionally are obtained cross-sectionally (Spector, 2006). This particular combination of study designs concerned a considerable proportion of studies in Madigan et al.,'s (2016) meta-analysis. Moderator analyses of potential interaction effects indicated that neither shared method variance from questionnaires nor use of cross-sectional study designs were significant factors in explaining between-study heterogeneity in the meta-analysis. Of note, however, is that potential combined effects from use of cross-sectional designs and use of self-reports as common methods remained unexplored. As such, there is still a possibility that the vast proportion of cross-sectional studies in the meta-analysis that gathered all data from self-reports might have contributed to inflate the overall associations.

Madigan et al., (2016) also noted that children had higher symptom scores in studies using self-report questionnaires, and that effect sizes were larger in studies where the child was the problem informant. These findings may contribute to explain the difference between the overall effect-size reported by Madigan and colleagues (2016) ($d = .58$) and the effect-size reported in the meta-analysis that included a wider scope of measurement-approaches (i.e., a lower proportion of the studies relied on self-reported data) ($d = .15$) (Groh et al., 2012). Furthermore, it is possible that such tendencies from more time- and cost-effective designs partly can account for the divergence between the meta-analytic conclusions and findings in the present study.

Because the present study used rather stringent statistical analyses, the probability of detecting falsely positive associations (so-called Type 1 error) was, to some extent, more limited than in some of the research cited above. Findings are also considered eligible for generalization to the wider child-population. When considering that neither type of statistical analyses nor sample size has been taken into account as inclusion- or exclusion criteria in the meta-analytic work reported above, it is possible that the reviews also have included findings reflecting Type 1 error.

Although meta-analyses are considered to be among the most robust methodological approaches available (Garg, Hackam, & Tonelli, 2008), the validity of meta-analytic findings is nevertheless constrained by the quality of the studies they consist of. In a field where

sample sizes, study designs and statistical analyses vary greatly, and where different measurement-approaches are preferred to assess attachment security at different ages (Bosmans & Kerns, 2015), findings may be expected to vary accordingly. When considering the enormous developments of socio-cognitive and emotional abilities, as well as the shifting attachment-needs manifesting at different stages of childhood and adolescence (Kerns & Brumariu, 2016), it might be helpful to investigate how attachment and internalizing symptoms appear to interact at different ages.

   Implications of age. The reviews cited above (i.e., Brumariu & Kerns, 2010; Groh et al., 2012; Madigan et al., 2016) all reported a pattern wherein relations between less secure attachment and internalizing symptoms increased with age. This appears to make sense, given that insecure IWMs (where the self is regarded as unworthy and others as unloving) become more generalized with age (Brumariu et al., 2012; Dykas & Cassidy, 2011; Raikes & Thompson, 2005) and because maturation permits negative emotions to grow more intense and last longer (Kerig et al., 2012, p. 295). However, when testing the effect of age in a multivariate regression model, Madigan et al., (2016) found that age instead became *negatively* associated with effect sizes. In other words, the prospective relation between less secure attachment and internalizing symptoms was, in fact, *weaker* as children grew older. This finding may reflect that insecure IWMs, where the self is perceived as unworthy of love and parents are viewed as incapable of providing protection or support, have greater implications for the ability to thrive at ages when children have a high dependence on parents. Correspondingly, as older children and adolescents become increasingly independent of parents and spend more time away from home, it is possible that other factors instead become more important for the development of internalizing symptomatology (Madigan, 2016). Research has also indicated that other risk-factors, such as family climate, peer-relationships and cognitive abilities become increasingly influential for development of internalizing difficulties in middle childhood, at the expense of attachment insecurity (DeKlyen & Greenberg, 2016).

   Despite the large body of research on potential relations between attachment security and internalizing difficulties, the overall findings from qualitative and quantitative reviews (i.e. Brumariu & Kerns, 2010; Groh et al., 2012; Madigan et al., 2016) largely and mainly reflect prospective associations in younger children or adolescents. In fact, among all studies included in the three reviews, only two studies (Brumariu & Kerns, 2008; Kerns, Siener, & Brumariu, 2011) assessed prospective relations between attachment security and internalizing symptoms in later middle childhood (10 – 12 years). Both studies assessed relations between

attachment security and anxiety symptoms (i.e., depressive symptoms as an outcome was not examined). Moreover, they both came with methodological issues: one study had a low sample size (N=74) and data from both influences were gathered from self-reports, the other study determined children's anxiety symptoms exclusively from questionnaires filled out by parents. This makes the grounds for direct comparison to the present study is rather thin.

Relations were Stronger for Associations Between Attachment Security and Depressive Symptoms. The only meta-study (Madigan et al., 2016) that has formally compared effect sizes for relations between attachment security and the two types of internalizing symptoms for children and adolescents, found relations to be significantly stronger for attachment security and depressive symptoms ($k = 62$, $d = .81$, $p <.001$) than for attachment security and anxiety symptoms ($k =15$, $d = .38$, $p <.001$). Because this meta-analysis largely relied on correlational data, directions of the influences cannot be determined. This leaves open the possibility that the different effect-sizes for attachment and the separate types of internalizing symptoms might be a product of depressive symptoms' impact on attachment security, as the findings from the present study and a prospective study with adolescents might indicate (Allen et al., 2004). In contrast to the large effect sizes reported in this meta-analysis, and more consistent with the findings reported herein, the attachment-internalizing literature has reported relations between these influences to be only modest in middle childhood. Moreover, in cases where significant relations were reported, attachment was often not the strongest predictor for adjustment (Kerns & Brumariu, 2016). Madigan and colleagues' (2016) also proposed, as one of the concluding remarks in their meta-analysis, that attachment per se might not account for a significant amount of variance in psychopathology. In a similar fashion, Brumariu and Kerns (2010) stated, in their literature review, that strong longitudinal support is needed to conclude that attachment is a causal factor for internalizing problems.

As such, there is a possibility that attachment security is not as strong a predictor for internalizing symptoms as long assumed – particularly in the case of children in later middle childhood. Future studies should continue to unravel longitudinal associations between attachment security and internalizing problems by rigorously test these relations reciprocally, using robust designs with adequate sample-sizes. Given the scarcity of research on how internalizing symptoms might impact development of internalizing symptoms, there is still much to learn about how these associations may come into play during different stages of development, where different aspects of parental behaviors are required for healthy child-parent relationships.

Attachment Security was Moderately Stable

As expected, attachment security was moderately stable from ages 10 to 12 years ($\beta =$ .49, $p <$.001). This stability-estimate is practically identical to findings from a review that assessed attachment for children in later middle childhood using Security Scale ($k = 5$, $\beta =$.51) (see Brumariu et al., 2018). TESS-data on attachment-stability from ages 4 to 6 years, indicated that attachment stability was only modest in preschool years ($\beta =$.26, $p < $.001) (Viddal, Berg-Nielsen, Belsky, & Wichstrøm, 2017). While acknowledging that this difference might be influenced by use of diverse measurement procedures (observational data for preschoolers, self-report in middle childhood), these data together suggest that attachment security become more stable during childhood. These findings resembles the attachment-stability literature, (Allen et al., 2004; Groh et al., 2014; Kerns & Brumariu, 2016), and supports Bowlby's (1973, 1980) proposition that IWMs become increasingly resistant to change as children grow older, allowing children to habituate to their social worlds.

The finding of moderate stability of attachment from ages 10 to 12 years indicates that children this age are generally inclined to sustain their established attachment perceptions of parents, and more so than in younger years (Bretherton & Munholland, 2008). At the same time, the moderate stability-estimate emphasizes that there is room for modification of attachment security in this period. As demonstrated by findings herein, depressive symptoms represent one factor capable of impacting children's attachment security in late middle childhood. Moreover, attachment has been found to become increasingly fixed in adolescence and adulthood (Fearon et al., 2016; Jones et al., 2018; Raikes & Thompson, 2005; Zimmermann & Becker-Stoll, 2002), which means that change towards less secure attachment in middle childhood become increasingly resistant to change as the child grows older.

Implications of findings

It is important to identify mechanisms related to less secure attachment in middle childhood (Kerns & Brumariu, 2016). Indeed, less secure attachment in middle childhood has been concurrently and prospectively linked to less healthy social, emotional and cognitive adaptation (Fish et al., 2004; Groh et al., 2014; Kerns & Brumariu, 2016; Raikes & Thompson, 2005; Thompson, 2016). As children's thought-patterns tend to become more self-perpetuating and automatic with time (Brumariu & Kerns, 2010), social, emotional and cognitive habits developed in middle childhood lay the foundation for habits in adolescence and adulthood (Kim-Cohen et al., 2003; Steele, 2015). As such, to prevent development of less secure attachment at an early stage, the present findings suggest that therapeutic work with children with depressive difficulties should include interventions aimed at establishing

secure child-parent attachment relationships. The sooner these patterns are addressed, the earlier a remedy can be sought, which, hopefully can foster more healthy developmental outcomes with enhanced life-quality.

Strength and Limitations

The longitudinal design, relatively large community sample, and stringent statistical procedures are considerable strengths of the present study. Another strength is the use of diagnostic interviews to determine internalizing symptoms, (Steinsbekk & Wichstrøm, 2018) which is rare in studies of children and adolescents. This study also bears the benefit of investigating relations between attachment security and the separate paths to anxiety symptoms and depressive symptoms. Additionally, internalizing data and attachment data are gathered by use of different measurement approaches. Finally, this study is one of few having investigated bidirectional relations between attachment security and internalizing symptomatology, and the first one to do so in middle childhood. Nevertheless, the work presented herein should also be interpreted in the context of several limitations.

First, findings are based on symptom counts rather than disorders. It is not known how this might impact generalization of the present findings to diagnosed disorders. However, the categorical view has been challenged by research suggesting that anxiety and mood disorders might not be categorical in nature, but that they are rather best viewed as symptoms varying along a continuum (Hankin & Abela, 2005; Haslam et al., 2012; Pine, Cohen, Cohen, & Brook, 1999). Another point worth addressing is the fact that CAPA coded symptom counts using "the either-or rule", meaning that all symptoms reported by either informant (parents or children) were included in the analysis. While this might seem controversial, this procedure has the benefit of detecting parent-reported internalizing symptoms that might have gone underreported by the child, without underestimating the value of child-reported symptoms that parents are unaware of. As later middle childhood is an age where internalizing symptoms become less overt, this procedure likely strengthens the data. The risk for over-estimation of symptoms is also likely to be low, as trained interviewers followed a strict protocol with discretionary and mandatory probes designed to avoid confusion between behavioral tendencies on the normality-spectrum and clinical symptoms.

As there is no "gold standard" for examining attachment in middle childhood (Bosmans & Kerns, 2015; Brumariu et al., 2018; Kerns & Brumariu, 2016), choosing a valid measure for attachment security was not as straightforward. Because middle childhood has been neglected period of inquiry for a long time (Brumariu et al., 2018), recent attention to attachment in this period has resulted in a wide scope of newly developed measures (Kerns &

Brumariu, 2016), most of which has not yet been sufficiently validated (Kerns & Seibert, in press). Although the questionnaire of choice for this study is a widely used attachment measure for children this age, the measure is not without its flaws. As is the case with all self-report questionnaires, there is a risk that response-biases could confound data in Security Scale. Children with anxiety symptoms have been identified as particularly likely to attempt to respond according to perceived social expectations (Schniering, Hudson, & Rapee, 2000, p. 432) and this should not be ignored, given that anxiety symptoms also is one of the outcomes evaluated in this study. However, Security Scale has attempted to offset children's tendency to response according to perceived social expectations by adopting Harter's "some kids-other kids"- format (Harter, 1982). While other common questionnaire response formats (e.g., true - false, like me -unlike me) may give children the impression that answers could be more or less desirable, the "some kids – other kids" format aims to normalize all options by implying that half of all children view themselves in one way whereas the other half view themselves in the opposite manner, thus legitimizing either choice (Harter, 1982). The option of choosing either "really true for me" or "sort of true for me" also broadens the range of choices over the typical two-choice format, with the benefit of allowing a greater variety of responses and thus a more nuanced attachment score.

Another concern with Security Scale is that attachment is scored with regard to only one parent. In the TESS, children were asked to respond according to the parent bringing them to the current session, enabling the possibility that attachment scores for some children reflect the relationship to different attachment-figures at T4 and T5. However, TESS-data from T1 and T2 indicates a trend wherein most children is brought to the sessions by the same parent each time (Hygen, Guzey, Belsky, Berg-Nielsen, & Wichstrøm, 2014). It should also be noted that IWMs are thought to become more generalized during middle childhood. Whereas younger children typically are viewed as secure with respect to specific caregivers, adolescents and adults are typically thought of as secure or insecure persons, and this transformation is assumed to happen during middle childhood (Raikes & Thompson, 2005). Further on, Security Scale determines children's attachment security dimensionally, not categorically. Most studies on attachment security relies on distinct attachment categories (Groh et al., 2014). However, it has been statistically demonstrated that attachment quality may be more accurately represented by dimensions (Fraley, 2002; Fraley & Spieker, 2003). Middle childhood is in addition a period where there is particularly little evidence for distinctive correlates between separate insecure categories of attachment (Kerns & Brumariu, 2016). Continuous scales have also been found to provide more analytical power (Collins &

Read, 1990). Nevertheless, as noted above, Security Scale does not appear to have incapsulated the aspect of increased autonomy as part of secure attachment in middle childhood. This represents a validity-concern that, regardless of strengths associated with the inventory, might have confounded data – particularly in the case of children with anxiety symptoms.

Also worth noting is that the TESS-sample includes children from Norway, a country where childhood psychiatric disorders have been found to be particularly low (Wichstrøm et al., 2012). In addition, children in this sample had limited ethnic diversity. Generalization to other countries or to children of different ethnicity than the current sample, or to more ethnically diverse samples should therefore be performed with this in mind.

This study focused exclusively on relations between child-parent attachment and internalizing symptomatology and did not consider these interactions within a wide array of potential moderating or mediating factors. It is indeed possible that other aspects (e.g., genes, personality, gender, communities, governments) could further nuance the findings, and highlight individual differences that could provide better fit of therapeutic interventions to sub-groups of children. However, it is difficult to measure everything and still measure it well (Sroufe, 2005, p. 46). As this is the first study to examine bidirectional relations between attachment and internalizing symptoms in middle childhood, it is important to analyze these influences largely in isolation for the sake of parsimony. Finally, as the study design is longitudinal and not experimental, the findings reported herein do not inform us about *causal* relations between depressive symptoms and low attachment security.

Conclusion

In conclusion, findings from the present study suggests that low attachment security does not predict symptoms of depression and anxiety in later middle childhood, and that attachment security in this period is moderately stable. However, depressive symptoms were found to predict less secure attachment in middle childhood. As no previous studies have investigated bidirectional relations between attachment security and internalizing symptoms in middle childhood, this study fills a gap in the literature. Findings reported herein are important as they may contribute to inform better-fitting interventions for prevention, detection and treatment.

Appendix

Table 1.

Sample Characteristics (%) of Participants at the Time of Study Enrollment (T1)

Gender of child	Male	49.1
	Female	50.9
Gender of parent informant	Male	15.2
	Female	84.8
Ethnic origin of biological mother	Norwegian	93.0
	Western countries	2.7
	Other countries	4.3
Ethnic origin of biological father	Norwegian	91.0
	Western countries	5.8
	Other countries	3.2
Childcare	Official daycare center	95.0
	Other	5.0
Biological parents' marital status	Married	56.3
	Cohabitating >6 months	32.6
	Separated	1.7
	Divorced	6.8
	Widowed	0.2
	Cohabitating <6 months	1.1
	Never lived together	1.3
Informant parent's socioeconomic status	Leader	5.7
	Professional, higher level	25.7
	Professional, lower level	39.0
	Formally skilled worker	26.0
	Farmer/fisherman	0.5
	Unskilled worker	3.1
Parent's highest completed education	Did not complete junior high school	0
	Junior high school (10th grade)	0.6
	Some education after junior high school	6.1
	Senior high school (13th grade)	17.3
	Some education after senior high school	3.4
	Some college or university education	7.6
	Bachelor's degree	6.2
	College degree (3-4 years of study)	33.6
	Master's degree or similar	20.3
	PhD completed or in progress	4.4
Household gross annual income	0-225' NOK (0-40' USD)	3.3
	225'-525' NOK (40'-94' USD)	18.4
	525'-900' NOK (94'-161' USD)	51.6
	900'+ NOK (161'+ USD)	26.7
At least one parent received treatment for mental health problems	None	73.8
	Outpatient only	16.3
	Hospitalized	10.0
Parents received medical treatment for mental health problems	No	87.4
	Yes	12.6

Figure 1.

Flow Chart of Participation Rates and Sample Recruitment Procedure from Study Enrollment to T5
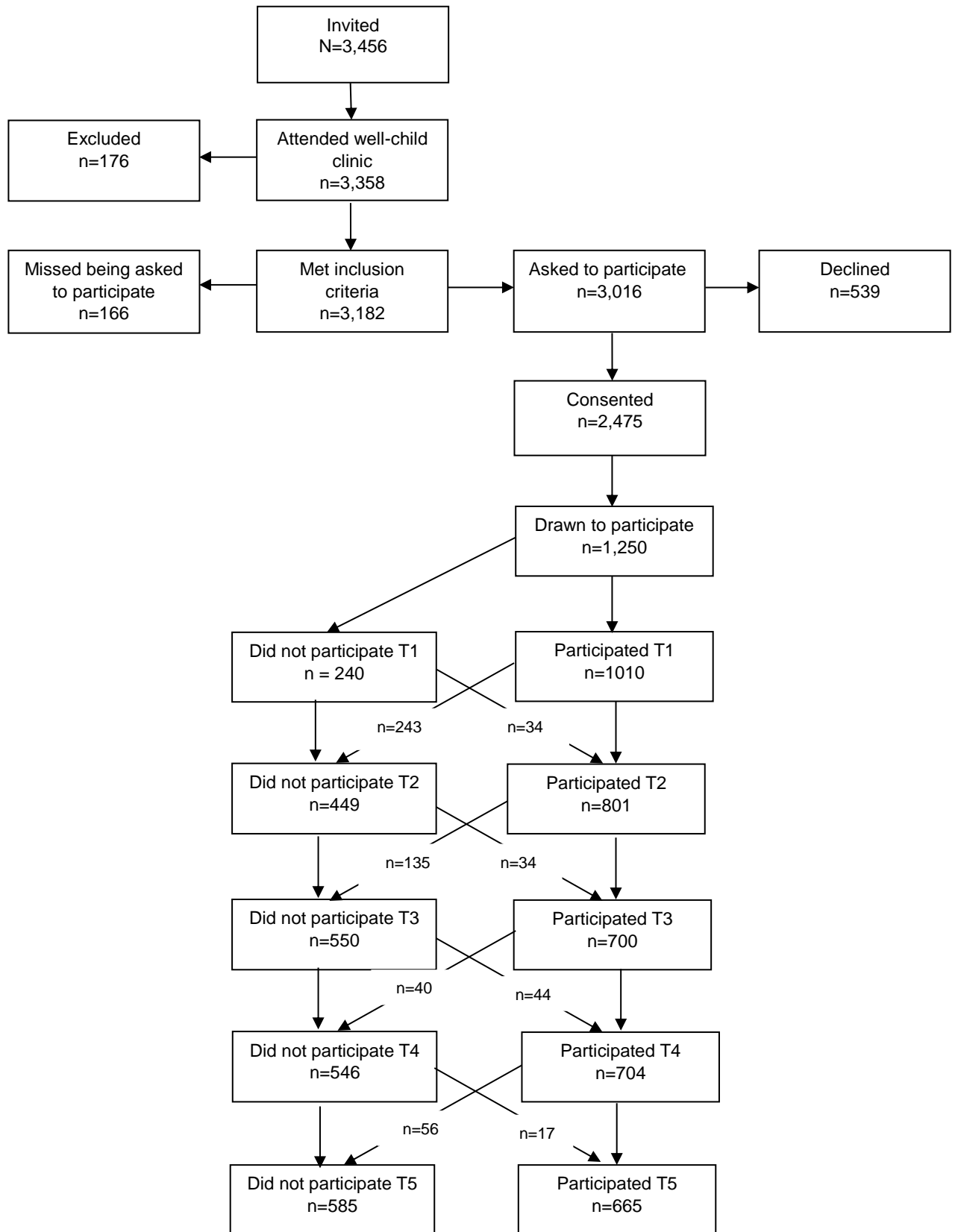
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