

**Adolescent Attachment and Problem Behaviours
Among Teens: The Roles of Parental Adult
Attachment**

**by
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Abstract

Teens with insecure attachment are at risk of developing problem behaviours, but the roles that parents' attachment strategies play in the development of adolescent problem behaviours is rarely explored. This study examined the direct and indirect impacts of parents' attachment strategies on teens' mental health in a clinical population. Results indicated that while parents' attachment strategies were uncorrelated with adolescent problem behaviours, they moderated the relationships between teens' attachment strategies and internalizing problems, but not externalizing problems. Specifically, parents' avoidant attachment strategies were associated with teens' heightened vulnerability to internalizing problems, especially among teens less prone to internalizing problems. Importantly, while teens' secure attachment strategies were generally associated with low levels of internalizing problems, the protective effect of attachment security was no longer present when parents consistently relied on avoidant attachment strategies, demonstrating a dismissing attachment style. Implications of these findings are discussed.

Keywords: problem behaviours, adolescent attachment, parental adult attachment, moderation, anxious attachment strategies, avoidant attachment strategies

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List of Acronyms

INT	Internalizing problems
EXT	Externalizing problems
A-ATT	Adolescent attachment
P-ATT	Parental attachment
SD	Standard deviation
ME	Marginal effect
CI	Confidence interval
FIML	Full information maximum likelihood
RMSEA	Root mean square error of approximation
PCLOSE	p of Close Fit
CFI	Comparative fit index
TLI	Tucker-Lewis index
APAI	The Adolescent-Parent Attachment Inventory
AAS	Adult Attachment Scale
BCFPI	The Brief Child and Family Phone Interview

Chapter 1.

Introduction

Mental health problems are highly prevalent among the adolescent population; approximately one in five teens in North America suffer from serious internalizing or externalizing problems (Merikangas et al., 2010; Romano, Tremblay, & Vitaro, 2001). Internalizing problems are distressing behaviours directed toward the self and are characterized by withdrawal, anxiety, fearfulness, and depression (Schleider & Weisz, 2016). Externalizing problems are distressing behaviors directed toward others and are characterized by hyperactivity, aggression, defiance, and delinquency (Loeber & Burke, 2011). According to a recent population-based survey, approximately 8% of Canadian teens reported serious internalizing problems and as many as 13% of teens reported serious externalizing problems (McMartin, Kingsbury, Dykxhoorn, & Colman, 2014). These problem behaviours are associated with significant health and economic costs for the teens themselves, their families, and society (Colman et al., 2009; Jaycox et al., 2009; Keenan-Miller, Hammen, & Brennan, 2007). For instance, clinical-level depression during adolescence predicts poor health condition, high healthcare utilization, and occupational impairment during young adulthood (Keenan-Miller et al., 2007). Severe externalizing problems among teens are associated with elevated risk of emotional and substance use problems, school dropout, and difficulties sustaining employment and marriage during adulthood (Colman et al., 2009).

There is significant interest in understanding the etiology of internalizing and externalizing problems among teens in order to develop effective prevention and treatment programs (Kieling et al., 2011; Yap, Pilkington, Ryan, & Jorm, 2014). While existing interventions have primarily targeted adverse parenting practices to prevent and to reduce serious problem behaviours among teens (Dretzke et al., 2009; Mejia, Calam, & Sanders, 2012), a variety of risk and protective factors play a role in the development of these problem behaviours (Fergus & Zimmerman, 2005). Thus, more research is needed to identify additional modifiable risk and protective factors that could be addressed in the prevention or treatment of adolescent internalizing and externalizing problems. Among the known risk and protective factors, teens' attachment to their

parents is shown to play an important role in the development and maintenance of internalizing and externalizing problems (Madigan, Brumariu, Villani, Atkinson, & Lyons-Ruth, 2016). Thus, it has become the emphasis of recently developed interventions (Ewing, Diamond, & Levy, 2015; Moretti, Obsuth, Craig, & Bartolo, 2015).

1.1. Attachment.

Attachment is a biologically based regulatory system that motivates individuals to seek and maintain proximity to primary caregivers, friends or partners to alleviate their own distress (Bowlby, 1982; Weiss, 2006). The person that one tends to turn to in times of distress is referred to as an attachment figure, and an important function of one's attachment figure is to provide a secure base for the individual (Bowlby, 1982). Adequate secure base support allows the individual to explore the environment and attain protection, support, and comfort in times of need (Ainsworth, 1991). Through interactions with attachment figures and the surrounding environment, the individual forms mental representations of the self and others (Bartholomew & Horowitz, 1991; Bowlby, 1988; McConnell & Moss, 2011). These mental representations influence one's interpersonal expectations and beliefs, especially in close relationships (Bartholomew & Horowitz, 1991; Bowlby, 1988). When facing distress, individuals who experience their attachment figure as available, attentive, and responsive are more likely to successfully alleviate their own distress through proximity seeking, resulting in a sense of attachment security (Bowlby, 1973). These experiences lead the individuals to form positive mental representations of the self and others, resulting in positive expectations about other people's availability in times of need, as well as positive beliefs about their own coping capacity (Bowlby, 1973). In contrast, when individuals experience their attachment figure as unavailable, inattentive, or nonresponsive in times of need, their attempts to alleviate distress through proximity seeking often fail (Bowlby, 1973). As a result, they fail to achieve a sense of attachment security (Bowlby, 1973). These experiences lead the individuals to form negative mental representations of the self or others, resulting in negative expectations about other people's availability in times of need, or negative beliefs about their own coping capacity (Bowlby, 1973).

Importantly, these interpersonal expectations and beliefs influence the attachment-related strategies of affect regulation that individuals adopt when facing distress (Mikulincer, Shaver, & Pereg, 2003). Therefore, attachment theory is an

important framework for understanding individual differences in affect regulation (Mikulincer et al., 2003). As noted, individuals who are secure in their attachment have positive expectations and beliefs about the self and others. Thus, they tend to employ secure attachment strategies to manage the distress they experience (Mikulincer et al., 2003). This means that they tend to acknowledge their own distress and are confident in their ability to cope, but they are also comfortable seeking support, with the belief that their display of distress will elicit supportive responses from others and result in distress relief (Mikulincer et al., 2003). In contrast, individuals who are insecure in their attachment have negative expectations and beliefs about the self or others. Thus, they tend to employ insecure attachment strategies to manage the distress they experience (Mikulincer et al., 2003). These strategies include anxious attachment strategies (i.e. hyperactivating strategies) and avoidant attachment strategies (i.e. deactivating strategies; Mikulincer et al., 2003). Specifically, when individuals believe that proximity seeking can sometimes meet their needs and result in distress relief, they tend to adopt anxious attachment strategies (Shaver & Mikulincer, 2007). These strategies involve intense efforts to achieve and maintain proximity through controlling, clinging, and coercive behaviours and hypersensitivity to signs of rejection and abandonment (Shaver & Mikulincer, 2007). In contrast, when individuals believe that proximity seeking will not meet their needs or result in distress relief, individuals who are insecure in their attachment tend to adopt avoidant attachment strategies (Shaver & Mikulincer, 2007). These strategies involve suppression or masking of proximity-seeking behaviours, maintenance of distance from others, and attempts to cope with distress on their own (Shaver & Mikulincer, 2007). Based on the attachment strategies that individuals typically adopt, four styles of attachment strategies have been identified: secure attachment style, characterized by low use of anxious and avoidant strategies; dismissing attachment style, characterized by low use of anxious strategies and high use of avoidant strategies; preoccupied attachment style, characterized by high use of anxious strategies and low use of avoidant strategies; and fearful attachment style, characterized by high use of anxious and avoidant strategies (Bartholomew & Horowitz, 1991). Together, dismissing, preoccupied, and fearful attachment styles are referred to as insecure attachment styles.

For the remainder of this paper, individuals who are referred to as “secure” are those who tend to use secure rather than insecure attachment strategies, and individuals

who are referred to as “insecure” are those who tend to use insecure rather than secure attachment strategies. Individuals who are referred to as “anxious” are those who use high levels of anxious attachment strategies, and individuals who are referred to as “avoidant” are those who use high levels of avoidant attachment strategies.

1.2. Adolescent Attachment and Adolescent Problem Behaviours.

Teens’ attachment to their parents (i.e., adolescent attachment) is closely linked to their cognitive, emotional, and social functioning (Bannink, Broeren, van de Looij-Jansen, & Raat, 2013; Dykas & Cassidy, 2011; Parrigon, Kerns, Abtahi, & Koehn, 2015). In both low-risk and high-risk populations, teens’ secure attachment strategies are associated with low levels of internalizing and externalizing problems (Brumariu & Kerns, 2010; Lacasa, Mitjavila, Ochoa, & Balluerka, 2015; Madigan et al., 2016; Savage, 2014). Longitudinal studies further demonstrate the reciprocal nature of the relationship between secure attachment and mental health during adolescence, indicating that increasing adolescent attachment security can have positive implications for teens’ emotional and behavioural functioning (Allen, Porter, McFarland, McElhaney, & Marsh, 2007; Buist, Deković, Meeus, & van Aken, 2004; Doyle & Markiewicz, 2005). Indeed, recent attachment-based interventions have been shown to increase attachment security and reduce a variety of adolescent problem behaviours (Ewing et al., 2015; Moretti et al., 2015), highlighting the protective effect of secure attachment for teens.

While there is consensus in the literature regarding the benefits of secure attachment among teens, studies that have examined the mental health implications of anxious and avoidant attachment strategies report conflicting results, but more consistent evidence links teens’ internalizing problems with their anxious strategies rather than avoidant strategies (Brumariu & Kerns, 2010). This suggests that teens’ anxious strategies may be more strongly associated with internalizing problems than teens’ avoidant strategies. While some studies report similar results for externalizing problems (Lacasa et al., 2015), most suggest that teens’ externalizing problems are associated with insecure attachment strategies in general (Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010; Madigan et al., 2016).

Gender differences in the relationship between adolescent attachment and adolescent problem behaviours have been examined in some studies, and results suggest that for internalizing problems, teens' attachment to fathers and attachment to mothers have comparable but independent effects among both boys and girls (Brumariu & Kerns, 2010; Liu, 2008; Wilkinson, 2006). For externalizing problems, teens' attachment to fathers and attachment to mothers are both linked to externalizing problems among boys and girls, but the strength of these associations may differ based on parent and youth gender (Fearon et al., 2010; Hoeve et al., 2012; Savage, 2014).

1.3. Parental Adult Attachment and Adolescent Problem Behaviours.

Considering that interactions with parents play an important role in shaping children's mental representations of the self and others, it is not surprising that children's attachment strategies often resemble those of their parents' (Bernier, Matte-Gagné, Bélanger, & Whipple, 2014; Sette, Coppola, & Cassibba, 2015; Verhage et al., 2016). However, this process of intergenerational transmission of attachment is complex, especially when the parents are inadequate in their provision of secure base support (Shah, Fonagy, & Strathearn, 2011). As a result, discrepancies in attachment strategies between parents and their children are not uncommon (Verhage et al., 2016). In the child and preadolescent population, 37% of children with insecure parents have a secure attachment style, and 31% of children with secure parents have an insecure attachment style (Verhage et al., 2016). Furthermore, 48% of parents who use high levels of anxious attachment strategies have children who use low levels of anxious attachment strategies; and 48% of parents who use high levels of avoidant attachment strategies have children who use low levels of avoidant attachment strategies (Verhage et al., 2016). Among teens, a similar pattern of results was reported (Scharf, Mayseless, & Kivenson-Baron, 2012), and the correlation of attachment security between parents and teens is in the low to moderate range (Allen et al., 2003; Lubiewska, 2012; Scharf et al., 2012). Altogether, these findings indicate that parents' and teens' attachment strategies do not always correspond. Given that parents' own insecure attachment strategies are associated with both adverse parenting practices and insecure attachment in their children (Ktistaki, Papadaki-Michailidi, & Karademas, 2014; Jones, Cassidy, & Shaver,

2015; Sette et al., 2015; Verhage et al., 2016), parents' attachment strategies (i.e., parental adult attachment) could be associated with teens' mental health.

Research on the relationships between parental adult attachment and problem behaviours among teens is limited. However, studies with younger populations suggest that parents' insecure attachment strategies could be directly associated with their children's problem behaviours. Specifically, studies with young children frequently report a significant correlation between parents' insecure attachment strategies and child internalizing and externalizing behaviours, regardless of parent gender (Cowan, Cowan, Cohn, & Pearson, 1996; Cowan, Cowan, & Mehta, 2009; Roskama, Meunier, & Stievenart, 2011). However, the few studies that investigated the differential impacts of parents' anxious and avoidant attachment strategies report inconsistent results, with some showing that parents' anxious strategies, rather than avoidant strategies, are associated with children's mental health problems (Marchand, Schedler, & Wagstaff, 2004); and others showing that parents' avoidant strategies, rather than anxious strategies, are associated with children's mental health problems (Karabekiroğlu & Rodopman-Arman, 2011). Studies with preadolescents also report a significant correlation between parents' insecure attachment strategies and preadolescent internalizing and externalizing problems (Esbjörn et al., 2013; Sümer & Harma, 2015; Yoo, Kim, Shin, Cho, & Hong, 2006; Zajac & Kobak, 2009). Mothers' anxious strategies, compared to avoidant strategies, are more strongly associated with preadolescents' internalizing problems, but preadolescents' internalizing problems are associated with fathers' insecure attachment strategies in general (Al-Yagon, 2008; Esbjörn et al., 2013; Sümer & Harma, 2015; Yoo et al., 2006). With respect to externalizing problems, conflicting results are reported. While one study found that mothers' anxious strategies, but not avoidant strategies, were associated with preadolescent externalizing problems (Al-Yagon, 2008), another study found that mothers' avoidant strategies were associated with more preadolescent externalizing problems than mothers' anxious strategies (Crowell, O'Connor, Wollmers, Sprafkin, & Rao, 1991). Additionally, one study that included both mothers and fathers in the sample found that parents' anxious and avoidant strategies were both associated with preadolescent externalizing problems (Yoo et al., 2006). In all, research on young children and preadolescents suggest that children's internalizing and externalizing problems are associated with their parents' insecure attachment strategies, regardless of parent gender. Additionally, mothers'

anxious and avoidant strategies could have differential implications for their children's mental health, especially with respect to internalizing problems. Among the adolescent population, it is unclear whether similar relationships between parents' own attachment strategies and adolescent problem behaviours exist, as few studies have examined such relationships in this population. One study on adolescent boys entering military service found that mothers' anxious strategies, rather than avoidant strategies, were correlated with their sons' internalizing problems; and fathers' attachment strategies were not correlated with their sons' internalizing problems (Scharf et al., 2012). Other studies found no significant correlation between parents' attachment strategies and adolescent problem behaviours, but they did not use continuous, standardized measures of internalizing and externalizing problems that are commonly used in the child and preadolescent literature (Allen et al., 2002; Bifulco, Moran, Jacobs, & Bunn, 2009). This measurement difference could have contributed to the discrepancy in results.

1.4. Interaction Between Parental Adult Attachment and Adolescent Attachment.

Within the attachment system, individuals manage their distress through secure base use. Effective secure base use involves a clear signaling of distress, approaching others for help, and the capacity to make use of the help that one obtains (Crowell et al., 2002; Crowell & Waters, 2006). The more secure attachment strategies that individuals use, the more likely they are to perceive others as supportive and effectively use their attachment figure as secure base (Collins & Feeney, 2004; Crowell & Waters, 2006; Doyle, Lawford, & Markiewicz, 2009; Herzberg et al., 1999). This is observed among couples (Collins & Feeney, 2004; Crowell et al., 2002; Crowell & Waters, 2006), as well as parent-teen dyads (Doyle et al., 2009; Dykas, 2003; Herzberg et al., 1999; Markiewicz, Lawford, Doyle, & Haggart, 2006). Among insecure teens, while both anxious and avoidant teens are more likely to miscue their parents and engage in ineffective support seeking behaviours, their approaches to secure base use differ (Kobak, Zajac, Herres, & Krauthamer Ewing, 2015; Mikulincer & Shaver, 2009). When experiencing distress, anxious teens try to seek support from others (Seiffge-Krenke, 2006), but often do so by amplifying the expression of their negative affect and engaging in clinging and controlling behaviours (Kobak et al., 2015). Avoidant teens on the other hand are more likely to minimize their negative affect (Kobak et al., 2015), and less likely

to directly deal with the problems or seek support from others even when they are distressed (Seiffge-Krenke, 2006; Seiffge-Krenke, 2011). Despite these differences, anxious and avoidant teens are both ineffective in their use of the parents as secure base, leaving them vulnerable to developing emotional and behavioural problems (Doyle et al., 2009; Markiewicz et al., 2006). In contrast, secure teens' capacity to effectively use their parents as secure base can protect them from the negative impacts of heightened distress (Woodhouse, Ramos-Marcuse, Ehrlich, Warner, & Cassidy, 2009).

While the extent to which teens can relieve their distress through secure base use is not the only determinant of their mental health (Murray & Farrington, 2010; Yap et al., 2014), factors that impede their secure base use, such as inadequate secure base support from the parents, can increase vulnerability to mental health problems. Adequate secure base support is characterized by an openness to distress signal detection, correct interpretation of the distress signals, and responsive support provision to the individual in distress (Crowell et al., 2002). The extent to which one can provide adequate secure base support to others is influenced by one's attachment strategies. Secure adults are more likely to provide adequate secure base support to their romantic partners than insecure adults (Crowell et al., 2002; Feeney, Collins, Van Vleet, & Tomlinson, 2013). Similarly, secure parents are more likely to be perceived by their adolescent children as an adequate source of secure base than insecure parents (Jones & Cassidy, 2014; Woodhouse, Dykas, & Cassidy, 2009). Among insecure parents, while anxious and avoidant parents are both limited in their provision of secure base support, these limitations correspond to different parent-child interaction patterns. Avoidant parents tend to minimize perceived negative emotions in their children (Morey & Gentzler, 2017), and attribute their children's distress to dispositional rather than situational factors (Jones et al., 2015). They also struggle to recognize others' needs and perceive themselves as having limited capacity to help others (Moreira & Canavarro, 2015). These relational strategies may reduce the capacity of avoidant parents providing secure base support for their teens in times of need (Feeney et al., 2013). Indeed, studies have shown that parents' avoidant strategies are associated with less mindful parenting and less responsive parenting practices, particularly when the children's distress levels are high (Jones et al., 2015; Moreira & Canavarro, 2015). This pattern of low responsiveness by avoidant adults, particularly when the other person is in high need of support, is also demonstrated among romantic partners (Feeney & Collins,

2001). Similarly, anxious parents experience challenges in accurately recognizing others' needs (Moreira & Canavarro, 2015). When others approach them for help, anxious individuals tend to feel distressed themselves, which in turn hinders their helping behaviours (Mikulincer, Shaver, Gillath, & Nitzberg, 2005). When they do provide help, it is often driven by their own needs for intimacy and closeness (Moreira & Canavarro, 2015; Reizer & Mikulincer, 2007), and it may be experienced by others as intrusive and overinvolved (Collins, Ford, Guichard, Kane, & Feeney, 2010). Thus, parents' anxious strategies are also associated with less mindful parenting and less responsive parenting practices (Jones et al., 2015; Moreira & Canavarro, 2015). Most studies on the association between parental adult attachment and parenting practices have focused on mother-teen dyads (Jones et al., 2015). Studies with father-teen dyads suggest that the correlation between fathers' attachment strategies and teens' perception of their fathers' secure base support is relatively weak (Jones & Cassidy, 2014; Woodhouse, Dykas et al., 2009), but fathers' insecure attachment strategies are associated with less responsive parenting behaviours (Chae & Lee, 2011). These results indicate that parents', particularly mothers', attachment strategies may influence their secure base support, and avoidant and anxious strategies among the parents are associated with different styles of secure base support.

In a dyadic interpersonal context, the extent to which teens can successfully manage their distress through secure base use is influenced by not only their ability to effectively use secure base, but also the quality of the secure base support they receive. As the former is closely linked to teens' attachment strategies, and the latter is influenced by parents' own attachment strategies, parents' attachment may moderate the relationship between teens' attachment and mental health. Specifically, while teens with secure attachment can more effectively use their parents as a secure base and are thus better protected against mental health problems, the poor secure base support provided by insecure parents may dampen the protective function of teens' secure attachment strategies. As a result, the negative association between teens' secure attachment strategies and mental health problems would be weakened. This moderation effect has not been examined among parent-teen dyads. However, studies with romantic partners have reported similar moderation effects (Alves et al., 2015; Domingue & Mollen, 2009; Wilson, Gardner, Brosi, Topham, & Busby, 2013). Specifically, secure individuals tend to experience fewer social, emotional, and behavioural problems than

insecure individuals, but the protective effect of secure attachment is often reduced or eliminated when the individuals' partners relied on insecure attachment strategies (Alves et al., 2015; Banse, 2004; Domingue & Mollen, 2009; Wilson et al., 2013).

Moreover, as anxious and avoidant teens differ in their approach to secure base use, and anxious and avoidant parents differ in their style of secure base support, different configurations of these insecure attachment strategies may have differential impacts on teens' mental health. In the romantic partner literature, compared to secure couples, couples with matched and mismatched insecure attachment strategies (anxious-anxious, anxious-avoidant, avoidant-anxious, avoidant-avoidant) are at higher risk of internalizing and externalizing behaviours (Bond & Bond, 2004; Bookwala, 2002; Donarelli, Kivlighan, Allegra, & Lo Coco, 2016; Dumas, Pearson, Elgin, & McKinley, 2008). While interesting, the interaction between individuals' own anxious and avoidant strategies was often not accounted for, and it is unclear whether the results can be generalized to parent-teen dyads. Thus, examining the interaction among teens' and parents' anxious and avoidant strategies can advance our understanding of how the different configurations of parents' and teens' insecure attachment strategies may differentially impact teens' mental health.

1.5. Present Study.

The overall objective of this study was to examine the direct and indirect impacts of parents' own attachment strategies on their adolescent children's mental health among a clinical population. I focused on the direct links between parents' attachment strategies and adolescent problem behaviours, as well as the moderation effect of parents' attachment strategies on the relationships between teens' attachment strategies and problem behaviours.

The analyses were carried out in three stages. In the first stage, the relationships between adolescent attachment and adolescent problem behaviours were examined. I hypothesized that teens' secure attachment strategies would be negatively associated with adolescent internalizing and externalizing problems. Similarly, I hypothesized that both anxious and avoidant attachment strategies among the teens would be positively associated with adolescent internalizing and externalizing problems. The interaction

effects of teens' anxious and avoidant strategies on adolescent problem behaviours were also examined.

In the second stage, the relationships between parents' attachment strategies and adolescent problem behaviours were examined. I hypothesized that parents' secure attachment strategies would be negatively associated with adolescent internalizing and externalizing problems. Similarly, I hypothesized that parents' anxious and avoidant attachment strategies would be positively associated with adolescent internalizing and externalizing problems. The interaction effects of parents' anxious and avoidant strategies on adolescent internalizing and externalizing problems were also examined. Additionally, considering that the associations between parents' attachment strategies and their children's problem behaviours have been reported to differ based on parent and youth gender (Scharf et al., 2012; Sümer & Harma, 2015), gender differences in the results were examined.

In the third stage, the moderation effects of parents' attachment strategies on the relationships between adolescent attachment and problem behaviours were examined. I hypothesized that the relationships between teens' secure attachment strategies and problem behaviours would be moderated by parents' secure attachment strategies. Due to the reduced protective effect of attachment security in teens with insecure parents, the association between teens' secure attachment strategies and problem behaviours was hypothesized to be weaker when parents used more insecure than secure attachment strategies. Additionally, the interaction effects of parents' and teens' anxious and avoidant strategies on adolescent internalizing and externalizing problems were also examined. Furthermore, given that mothers' and fathers' attachment strategies may differentially influence their capacity to provide secure base support (Jones & Cassidy, 2014; Woodhouse, Dykas et al., 2009), and the effects of mothers' and fathers' support and responsiveness on their adolescent children's mental health may differ between boys and girls (Piko & Balázs, 2012; Yeung & Leadbeater, 2010), gender differences in the moderation effects were examined.

Chapter 2.

Method

2.1. Participants.

Participants for this study were teens with serious emotional or behavioural problems and their parents, who accessed mental health services in urban and rural communities in British Columbia. Participants were enrolled in a large-scale prospective longitudinal study evaluating treatment effectiveness; only baseline data was used in the current study. Recruitment took place from January 2014 to January 2017. A total of 884 families consented to participate in the study. As the present study focuses on the adolescent population, only data of parents and teens ages 13 to 19 ($n = 548$) was utilized. Parent-teen dyads with non-biological parents ($n = 109$), as well as parent-teen dyads who failed to complete measures of adult attachment, adolescent attachment, and adolescent problem behaviours ($n = 8$), were excluded from this study. The final sample for this study consisted of 431 parent-teen dyads with biological parents and adolescent children.

2.2. Measures.

Parents and their teens completed a package of self-report measures described below upon entry into the study.

2.2.1. The Adolescent-Parent Attachment Inventory (APAI).

The APAI (Moretti & Obsuth, 2009) is a 36-item measure, adapted from the Experiences in Close Relationships (ECR) scale, that measures the quality of adolescents' attachment to their primary caregivers. It was shown to have good psychometric properties (Moretti et al., 2015; Sierra Hernandez, 2015). The questionnaire asks teens to rate a series of statements on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Consistent with other self-report measures of attachment, including the ECR, two underlying factors were identified from APAI,

including attachment anxiety and attachment avoidance (Moretti et al., 2015; Sierra Hernandez, 2015).

The present study adopted a modified version of APAI, consisting of 16 items, with 7 and 9 items measuring attachment anxiety and attachment avoidance respectively. Items tapping each scale were averaged to compute attachment anxiety and avoidance scores (Cronbach's alphas were .83 and .88 respectively), measuring teens' anxious and avoidant attachment strategies respectively. The mean of attachment anxiety and avoidance scores was computed and reverse scored to derive an adolescent attachment security score, measuring teens' secure attachment strategies. It has a possible range of 1 to 7.

2.2.2. Adult Attachment Scale (AAS).

The AAS (Collins & Read, 1990) is an 18-item measure of adult attachment that assesses individuals' beliefs and attitudes about adult relationships. It was shown to have adequate psychometric properties (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010). Consistent with other self-report measures of attachment, two underlying factors were identified from AAS, including attachment anxiety and attachment avoidance, measured by 6 and 12 items respectively (Brennan, Clark, & Shaver, 1998; Sanford, 1997; Wei, Heppner, & Mallinckrodt, 2003).

The AAS measure used in the present study asked the parents to rate all 18 items with respect to their past and current relationships on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Items tapping each scale were averaged to compute attachment anxiety and avoidance scores (Cronbach's alphas were .76 and .86 respectively), measuring parents' anxious and avoidant attachment strategies respectively. The mean of attachment anxiety and avoidance scores was computed and reverse scored to derive a parental attachment security score. It has a possible range of 1 to 7.

2.2.3. The Brief Child and Family Phone Interview (BCFPI).

The BCFPI (Cunningham, Pettingill, & Boyle, 2000) is a standardized assessment tool that measures problem behaviours among children and adolescents

referred for mental health services. It was shown to have good psychometric properties (Boyle et al., 2009). Factor analysis identified six mental health subscales measuring different domains of functioning related to DSM-IV diagnoses, including attention-deficit hyperactivity disorder (ADHD; regulation of attention), oppositional defiant disorder (ODD; cooperativeness), conduct disorder (CD; conduct problems), separation anxiety disorder (SAD; separation anxiety), generalized anxiety disorder (GAD; managing anxiety), and major depressive disorder (MDD; managing mood; Cunningham, Boyle, Hong, Pettingill, & Bohaychuk, 2009). Each subscale includes six items.

In the present study, the BCFPI was administered to teens as a paper survey. Teens were asked to rate the frequency of their engagement in each problem behaviour in the past six months on a 3-point scale, ranging from 1 (Never) to 3 (Often). Three items measuring suicidality were added to the subscale measuring MDD symptoms. Items tapping each subscale were averaged to compute ADHD, ODD, CD, SAD, GAD, and MDD subscale scores (Cronbach's alphas were .81, .82, .71, .83, .88, and .93 respectively). An externalizing problem score was computed as the sum of ADHD, ODD, and CD scores. An internalizing problem score was computed as the sum of SAD, GAD, and MDD scores. Both scores had a possible range of 3 to 9.

2.3. Data Analytic Method.

Path analysis was used in order to simultaneously estimate the relationship between attachment and internalizing and externalizing problems while accounting for the correlation between the two types of problem behaviours. Thus, both internalizing and externalizing problems were included as dependent variables in all path analysis models, and their residuals were allowed to covary. Full Information Maximum Likelihood (FIML) was used to estimate missing data. In addition to the paths from independent variables to the dependent variables, as well as the residual covariance between internalizing and externalizing problems, likelihood ratio tests were used to identify additional paths that could be added to each model to improve model fit. Two absolute model fit indices, including the root mean square error of approximation (RMSEA) and Model chi-square, were reported; they compared the estimated model to a just-identified model where the number of paths estimated equaled the maximum number of independent correlations. Incremental model fit indices, including Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI), were also reported; they compared the estimated

model to a null model (Hooper, Coughlan, & Mullen, 2008). An RMSEA less than or equal to 0.06, combined with a p of Close Fit (PCLOSE) greater than .05, is indicative of a close fit (Hu & Bentler, 1999), and model chi-square probability value greater than 0.05 (Barrett, 2007), as well as CFI and TLI equal to or greater than .95, are indicative of good model fit (Hooper et al., 2008). Additionally, coefficient of determination R^2 was reported for each model, which measured the amount of variance in the dependent variables explained by the independent variables. Where appropriate, effect sizes were reported. Due to the nature of the analyses performed, standardized regression coefficients (β) were used as indices of effect size (Nieminen, Lehtiniemi, Vähäkangas, Huusko, & Rautio, 2013).

2.3.1. Relationships Between Adolescent Attachment and Adolescent Problem Behaviours.

Model 1 was used to examine the relationships between adolescent attachment security and adolescent internalizing and externalizing problems (see Figure 2.1). Model 2 was used to examine adolescent problem behaviours' relationships with adolescent attachment anxiety and avoidance (see Figure 2.1). The interaction between adolescent attachment anxiety and avoidance was then added into the model as an independent variable (Model 3; see Figure 2.1). If the path from the interaction term to internalizing or externalizing problems was significant or approached significance, the interaction was further analyzed by examining the marginal effects of adolescent attachment anxiety (or avoidance) when adolescent attachment avoidance (or anxiety) was 1 SD above and below the mean.

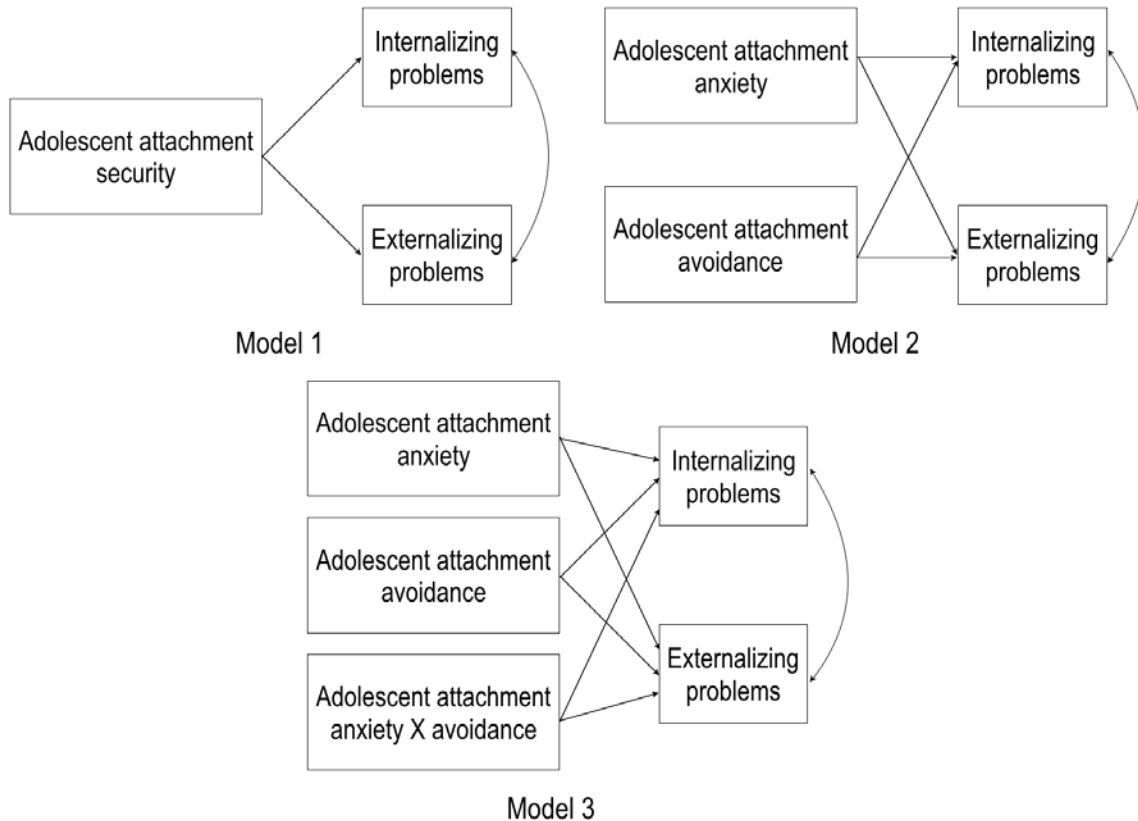


Figure 2.1. Path Analysis Models Examining the Relationships Between Adolescent Attachment and Adolescent Problem Behaviours.

2.3.2. Relationships Between Parental Adult Attachment and Adolescent Problem Behaviours.

Model 4 was used to examine the relationships between parental attachment security and adolescent internalizing and externalizing problems (see Figure 2.2). If the path from parental attachment security to adolescent internalizing or externalizing problems was significant, adolescent attachment security was added into the model as an additional independent variable to examine if parents' attachment security explained variance in the outcome variable over and above the variance explained by adolescent attachment security.

Model 5 was used to examine adolescent problem behaviours' relationships with parental attachment anxiety and avoidance (see Figure 2.2). Then the interaction between parental attachment anxiety and avoidance was added into the model (Model 6; see Figure 2.2). If the path from the interaction term to internalizing or externalizing problems was significant or approached significance, the interaction was further

analyzed by examining the marginal effects of parental attachment anxiety (or avoidance) when parental attachment avoidance (or anxiety) was 1 SD above and below the mean. In Model 5 and 6, if any path from parental attachment variables to adolescent internalizing or externalizing problems was significant, adolescent attachment anxiety and avoidance were added into the model as additional independent variables to examine if parents' attachment variables explained variance in the outcome variable over and above the variance explained by adolescent attachment anxiety and avoidance.

Gender differences in the relationships between adolescent problem behaviours and parental adult attachment were examined by assessing model invariance across gendered subsamples for each path analysis model (Models 4-6). Differences across parent gender were first examined, then differences across youth gender were examined among mother-teen dyads. When a model differed significantly across parent or youth gender, it was refitted for each gendered subsample separately. Differences between father-daughter and father-son dyads were not examined because of the small sample size of father-teen dyads.

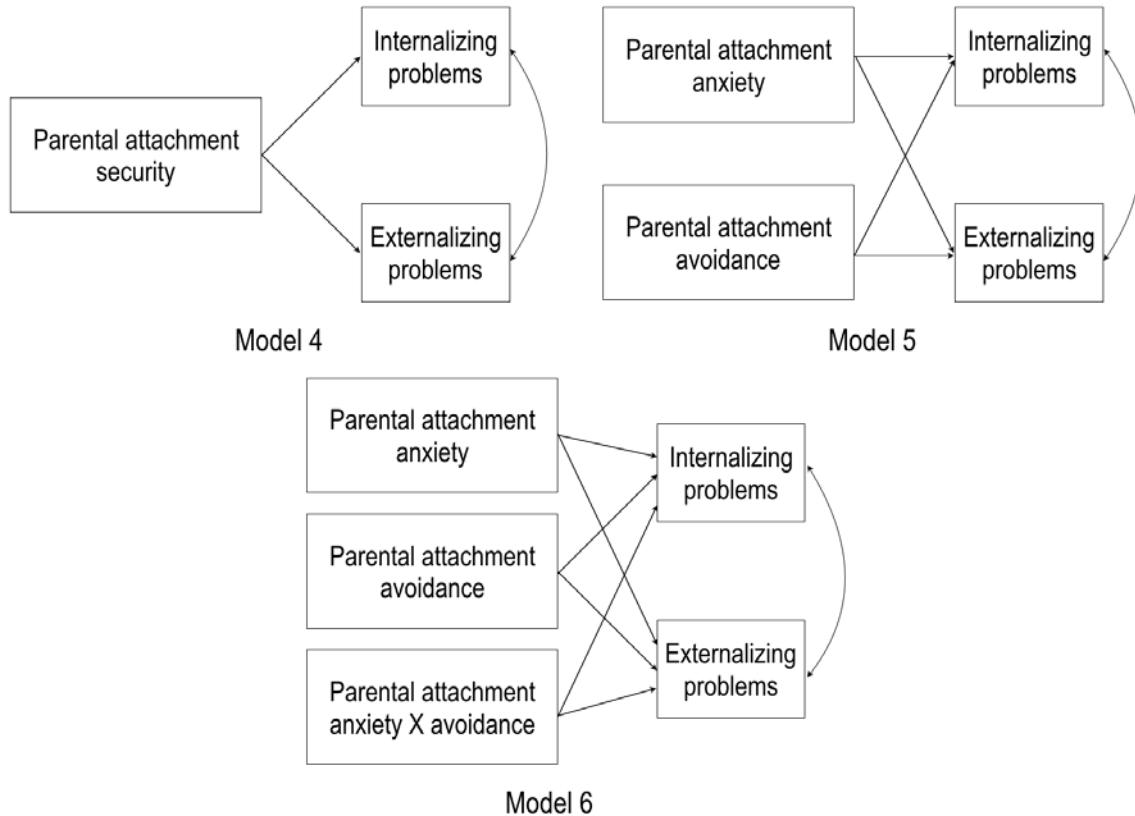


Figure 2.2. Path Analysis Models Examining the Relationships Between Parental Adult Attachment and Adolescent Problem Behaviours.

2.3.3. Moderation Effects of Parental Adult Attachment on the Relationships Between Adolescent Attachment and Adolescent Problem behaviours.

Model 7 was used to examine the moderation effects of parental attachment security on the relationships between adolescent attachment security and problem behaviours (see Figure 2.3). Attachment variables were mean centered before the interaction variable was calculated. If the path from the interaction variable to adolescent internalizing or externalizing problems was significant or approached significance, the moderation effect was analyzed by estimating the marginal effects of adolescent attachment security when parental attachment security was 1 SD above and below the mean.

Gender differences in the moderation effects of parental attachment security were examined by assessing model invariance across gendered subsamples for Model 7. Differences across parent gender were first examined, then differences across youth

gender were examined among mother-teen dyads. When a model differed significantly across parent or youth gender, it was refitted for each gendered subsample separately. Differences between father-daughter and father-son dyads were not examined because of the small sample size of father-teen dyads.

To examine the interaction effects of parental attachment anxiety, parental attachment avoidance, adolescent attachment anxiety, and adolescent attachment avoidance on adolescent problem behaviours, the four-way interaction variable and all lower level interaction variables and main effects were used to predict adolescent internalizing and externalizing problems (Model 8). Attachment variables were mean centered before the interaction variable was calculated. If the path from the four-way interaction variable to internalizing or externalizing problems was significant or approached significance, the moderation effect was further analyzed by estimating the relationships between adolescent attachment and problem behaviours associated with four configurations of parental attachment anxiety and avoidance levels. The four configurations correspond to the four styles of attachment strategies: attachment anxiety and avoidance 1 SD below the mean correspond to a secure attachment style, attachment anxiety 1 SD below the mean and avoidance 1 SD above the mean correspond to a dismissing attachment style, attachment anxiety 1 SD above the mean and avoidance 1 SD below the mean correspond to a preoccupied attachment style, and attachment anxiety and avoidance 1 SD above the mean correspond to a fearful attachment style. For each parental attachment style, the significance of the interaction between adolescent attachment anxiety and avoidance was first examined. If the interaction was significant or approached significance, it was further analyzed by examining the marginal effects of adolescent attachment anxiety (or avoidance) when adolescent attachment avoidance (or anxiety) was 1 SD above and below the mean. If the interaction did not approach significance, the main effects of adolescent attachment anxiety and avoidance were examined. Due to the large number of paths estimated in Model 8, possible gender differences in this model were not examined.

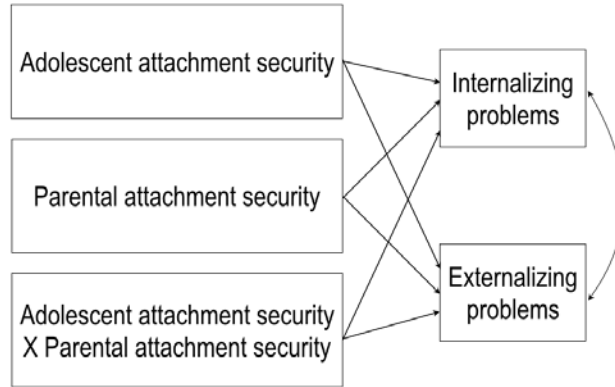


Figure 2.3. Path Analysis Model Examining the Moderation Effects of Parental Attachment Security on the Relationships Between Adolescent Attachment Security and Adolescent Problem Behaviours.

Chapter 3.

Results

3.1. Descriptive Data.

The majority of the participating parents in the present sample were female ($n = 372$, 86.3%; male: $n = 59$, 13.7%). Their average age was 44.26 ($SD = 6.57$). Seventy-two percent of these parents self-identified as Caucasians ($n = 311$), 7% self-identified as having Aboriginal heritage ($n = 30$), 8% self-identified as Asians ($n = 34$), 9% identified with other or mixed ethnicities ($n = 37$), and 4% did not report on their ethnicities ($n = 15$). The mean number of children parented by the parents was 2.16 ($SD = 1.10$). The majority of the parents held a university or college degree ($n = 227$, 53%), had some college or university education ($n = 72$, 17%), or completed high school education ($n = 72$, 17%). Thirty-one percent of the parents reported earning an annual family income of \$75,000 or more ($n = 134$), 18% reported earning between \$50,000 and \$75,000 ($n = 76$), 25% reported earning between \$25,000 and \$50,000 ($n = 107$), and 21% reported earning \$25,000 or less ($n = 89$), and 6% did not report on family income ($n = 25$).

Most of the participating teens in the present sample were female ($n = 258$, 59.9%; male: $n = 172$, 39.9%; unknown: $n = 1$, 0.2%). Their mean age was 14.8 ($SD = 1.43$), and mean grade level in school was 9.5 ($SD = 1.25$). Sixty-five percent of the participating teens were identified by their parents as Caucasians ($n = 279$), 16% as having Aboriginal heritage ($n = 67$), 7% as Asians ($n = 30$), 9% as other or mixed ethnicities ($n = 39$). Four percent of parents did not report on their children's ethnicity. The majority of the teens lived in two-parent households ($n = 195$, 45.2%) or one-parent households ($n = 170$, 39.4%).

Descriptive statistics of the adolescent attachment variables, parental adult attachment variables, and adolescent problem behaviours are shown in Table 3.1.

Table 3.1. Descriptive Statistics.

Variables	Mean	SD	Minimum	Maximum
Internalizing problems	5.74	1.35	3.00	8.78
Externalizing problems	5.24	1.00	3.00	8.00
Adolescent attachment security	4.65	1.00	1.63	7.00
Adolescent attachment anxiety	2.68	1.25	1.00	6.43
Adolescent attachment avoidance	4.02	1.41	1.00	6.89
Parental attachment security	4.39	0.99	1.71	6.92
Parental attachment anxiety	3.47	1.26	1.00	6.83
Parental attachment avoidance	3.76	1.05	1.17	6.42

3.2. Bivariate Correlations.

Bivariate Pearson Product Moment Correlations among adolescent attachment variables, parental adult attachment variables, and adolescent internalizing and externalizing problems were calculated (see Table 3.2).

Table 3.2. Pearson Product Moment Correlations.

Variables	INT	EXT	A-ATT security	A-ATT anxiety	A-ATT avoidance	P-ATT security	P-ATT anxiety
EXT	r .510*** p .000						
A-ATT security	r -.390*** p .000	-.393***					
A-ATT anxiety	r .434*** p .000	.278***	-.717***				
A-ATT avoidance	r .169** p .002	.313***	-.786***	.133*			
P-ATT security	r .023 p .680	.053	-.040	.067	-.005		
P-ATT anxiety	r -.023 p .679	-.077	.020	-.033	.001	-.880***	
P-ATT avoidance	r -.015 p .783	-.008	.048	-.084	.009	-.825***	.458***

*: $p < .05$; **: $p < .01$; ***: $p < .001$. INT: Internalizing problems; EXT: externalizing problems; A-ATT: Adolescent attachment; P-ATT: Parental attachment.

3.3. Relationships Between Adolescent Attachment and Adolescent Problem Behaviours.

Models 1-3 (see Table 3.3) were all shown to have good fit (Model 1: $CFI = 1.00$, $TLI = 1.00$; Model 2: $CFI = 1.00$, $TLI = 1.00$; Model 3: $\chi^2 [1, N = 431] = .001$, $p = .971$, $RMSEA = 0.00$, $PCLOSE = .981$, $CFI = 1.00$, $TLI = 1.03$). Models 1 and 2 were just-identified models, and thus only incremental fit indices were reported for these models.

Consistent with my hypotheses, Model 1 and 2 showed that teens' attachment security was significantly, negatively associated with their internalizing problems ($\beta = -0.39$) and externalizing problems ($\beta = -0.39$), and teens' attachment anxiety and avoidance were significantly, positively associated with their internalizing problems (anxiety: $\beta = 0.42$; avoidance: $\beta = 0.11$) and externalizing problems (anxiety: $\beta = 0.24$; avoidance: $\beta = 0.28$). Results from Model 3 showed that the interaction effect of adolescent attachment anxiety and avoidance was significant for adolescent externalizing problems ($\beta = -0.159$), but did not approach significance for internalizing problems ($\beta = -0.016$). Further analyses of the significant interaction effect (see Figure 3.1) showed that adolescent attachment anxiety was only significantly, positively associated with externalizing problems when adolescent attachment avoidance was low (Low avoidance: $ME = 0.314$, $SE = 0.056$, $p < .001$, $\beta = 0.399$; High avoidance: $ME = 0.072$, $SE = 0.055$, $p = .189$, $\beta = 0.082$). Similarly, adolescent attachment avoidance was only significantly, positively associated with externalizing problems when adolescent attachment anxiety was low (Low anxiety: $ME = 0.289$, $SE = 0.045$, $p < .001$, $\beta = 0.414$; High anxiety: $ME = 0.075$, $SE = 0.053$, $p = .159$, $\beta = 0.097$).

Table 3.3. Path Analysis Results Examining the Relationships Between Adolescent Attachment and Adolescent Problem Behaviours.

Model	Path	Coef	SE	z	p	R ²
Model 1	A-ATT security -> INT	-0.522***	0.068	-7.72	.000	.200
	Constant -> INT	5.745***	0.067	85.52	.000	
	A-ATT security -> EXT	-0.390***	0.050	-7.84	.000	
	Constant -> EXT	5.242***	0.049	105.93	.000	
	Covar (e.INT, e.EXT)	0.482***	0.067	7.19	.000	
Model 2	A-ATT anxiety -> INT	0.453***	0.053	8.53	.000	.259
	A-ATT avoidance -> INT	0.108*	0.047	2.30	.022	
	Constant -> INT	5.746***	0.065	88.13	.000	
	A-ATT anxiety -> EXT	0.190***	0.040	4.72	.000	
	A-ATT avoidance -> EXT	0.200***	0.036	5.61	.000	
	Constant -> EXT	5.242***	0.049	105.98	.000	
	Covar (e.INT, e.EXT)	0.483***	0.065	7.39	.000	
	Covar(A-ATT anxiety, A-ATT avoidance)	0.230*	0.095	2.42	.016	
Model 3	A-ATT anxiety -> INT	0.454***	0.053	8.55	.000	.283
	A-ATT avoidance -> INT	0.105*	0.048	2.22	.027	
	A-ATT anxiety X avoidance -> INT	-0.012	0.036	-0.34	.738	
	Constant -> INT	5.749***	0.066	87.50	.000	
	A-ATT anxiety -> EXT	0.193***	0.040	4.86	.000	
	A-ATT avoidance -> EXT	0.182***	0.036	5.12	.000	
	A-ATT anxiety X avoidance -> EXT	-0.086**	0.027	-3.19	.001	
	Constant -> EXT	5.262***	0.049	107.04	.000	
	Covar (e.INT, e.EXT)	0.480***	0.064	7.44	.000	
	Covar(A-ATT anxiety, A-ATT avoidance)	0.231*	0.094	2.45	.014	
Covar(A-ATT avoidance, interaction)	-0.404**	0.140	-2.88	.004		

*: p < .05; **: p < .01; ***: p < .001. Sample size: 346. A-ATT: Adolescent attachment; INT: Internalizing problems; EXT: externalizing problems; Covar: covariance.

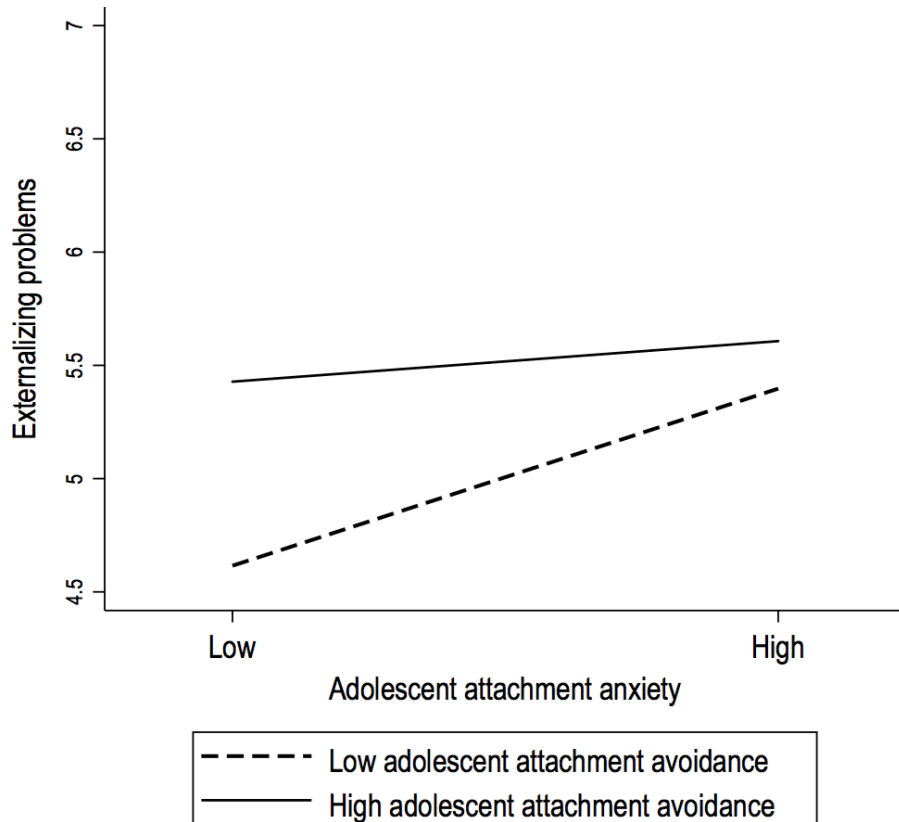


Figure 3.1. Interaction Effect of Adolescent Attachment Anxiety and Avoidance on Adolescent Externalizing Problems.

3.4. Relationship Between Parental Adult Attachment and Adolescent Problem Behaviours.

Models 4 to 6 (see Table 3.4) were all shown to have good fit (Model 4: $CFI = 1.00$, $TLI = 1.00$; Model 5: $CFI = 1.00$, $TLI = 1.00$; Model 6: $\chi^2 [1, N = 431] = .627$, $p = .428$, $RMSEA = 0.00$ [90% $CI = 0.00, 0.12$], $PCLOSE = .631$, $CFI = 1.00$, $TLI = 1.03$). Models 4 and 5 were just-identified models, and thus only incremental fit indices were reported for these models.

Contrary to my hypotheses, Models 4 and 5 showed that parents' attachment security was not significantly associated with teens' internalizing problems ($\beta = 0.022$) or externalizing problems ($\beta = 0.054$), nor was parents' attachment anxiety or avoidance (anxiety-internalizing: $\beta = -0.019$; avoidance-internalizing: $\beta = -0.006$; anxiety-externalizing: $\beta = -0.095$; avoidance-externalizing: $\beta = 0.036$). Model 6 showed that the interaction effects of parents' attachment anxiety and avoidance did not approach

significance for adolescent internalizing problems ($\beta = 0.007$) or externalizing problems ($\beta = -0.023$).

Furthermore, Models 4 to 6 were found to be invariant across parent gender, suggesting that the relationships between parental adult attachment and adolescent problem behaviours did not differ significantly between mother-teen dyads and father-teen dyads (Model 4: $\chi^2 [2, N = 431] = 1.11, p = .574$; Model 5: $\chi^2 [4, N = 431] = 3.35, p = .500$; Model 6: $\chi^2 [4, N = 431] = 4.43, p = .618$). Among mother-teen dyads, the relationships between parental adult attachment and adolescent problem behaviours did not differ significantly between mother-daughter dyads and mother-son dyads (Model 4: $\chi^2 [2, N = 431] = 1.58, p = .453$; Model 5: $\chi^2 [4, N = 431] = 3.45, p = .485$; Model 6: $\chi^2 [2, N = 431] = 3.85, p = .697$).

Table 3.4. Path Analysis Results Examining the Relationships Between Parental Adult Attachment and Adolescent Problem Behaviours.

Model	Path	Coef	SE	z	p	R ²
Model 4	P-ATT security -> INT	0.031	0.074	0.41	.681	0.003
	Constant -> INT	5.744***	0.073	78.94	.000	
	P-ATT security -> EXT	0.054	0.056	0.96	.335	
	Constant -> EXT	5.243***	0.054	97.74	.000	
	Covar (e.INT, e.EXT)	0.685***	0.081	8.42	.000	
Model 5	P-ATT anxiety -> INT	-0.021	0.066	-0.31	.753	0.008
	P-ATT avoidance -> INT	-0.008	0.078	-0.10	.918	
	Constant -> INT	5.744***	0.073	78.93	.000	
	P-ATT anxiety -> EXT	-0.075	0.050	-1.52	.128	
	P-ATT avoidance -> EXT	0.034	0.059	0.58	.562	
	Constant -> EXT	5.243***	0.054	97.93	.000	
	Covar (e.INT, e.EXT)	0.684***	0.081	8.43	.000	
	Covar(P-ATT anxiety, P-ATT avoidance)	0.606***	0.071	8.50	.000	
Model 6	P-ATT anxiety -> INT	-0.021	0.066	-0.32	.747	0.009
	P-ATT avoidance -> INT	-0.005	0.081	-0.06	.949	
	P-ATT anxiety X avoidance -> INT	0.007	0.057	0.13	.900	
	Constant -> INT	5.740***	0.081	71.00	.000	
	P-ATT anxiety -> EXT	-0.074	0.050	-1.49	.136	
	P-ATT avoidance -> EXT	0.027	0.061	0.45	.656	
	P-ATT anxiety X avoidance -> EXT	-0.017	0.043	-0.39	.700	
	Constant -> EXT	5.253***	0.060	88.00	.000	
	Covar (e.INT, e.EXT)	0.684***	0.081	8.43	.000	
	Covar(P-ATT anxiety, P-ATT avoidance)	0.595***	0.069	8.57	.000	
	Covar(P-ATT avoidance, interaction)	-0.321***	0.065	-4.92	.000	

*: $p < .05$; **: $p < .01$; ***: $p < .001$. Sample size: 431. P-ATT: Parental attachment; A-ATT: Adolescent attachment; INT: Internalizing problems; EXT: externalizing problems; Covar: covariance.

3.5. Moderation Effects of Parental Adult Attachment on the Relationships Between Adolescent Attachment and Adolescent Problem behaviours.

Model 7 was used to examine the moderation effects of parental attachment security on the relationships between adolescent attachment security and problem behaviours (see Table 3.5). The model was shown to have good fit, $\chi^2 (2, N = 431) = .547, p = .761, RMSEA = 0.00 [90\% CI = 0.00, 0.06], PCLOSE = .907, CFI = 1.00, TLI = 1.03$.

The path coefficient of the interaction term did not approach significance for internalizing problems ($\beta = 0.081$) or externalizing problems ($\beta = 0.077$), suggesting that, contrary to my hypothesis, the relationships between teens' attachment security and adolescent problem behaviours did not differ significantly based on parents' attachment security.

Furthermore, Model 7 was shown to be invariant across parent gender, suggesting that the moderation effects of parental attachment security on the relationships between adolescent attachment security and adolescent problem behaviours were not significant among mother-teen dyads or father-teen dyads ($\chi^2 [6, N = 431] = 3.07, p = .800$). No significant differences were found between mother-daughter and mother-son dyads either ($\chi^2 [6, N = 431] = 8.03, p = .236$).

Table 3.5. Path Analysis Results Examining the Moderation Effects of Parental Attachment Security on the Relationships Between Adolescent Attachment Security and Adolescent Problem Behaviours.

Path	Coef	SE	z	p	R ²
A-ATT security -> INT	-0.521***	0.067	-7.72	.000	0.208
P-ATT security -> INT	0.024	0.069	0.35	.729	
A-ATT security X P-ATT security -> INT	0.115	0.071	1.60	.109	
Constant -> INT	5.751***	0.067	85.79	.000	
A-ATT security -> EXT	-0.388***	0.050	-7.81	.000	
P-ATT security -> EXT	0.048	0.052	0.93	.354	
A-ATT security X P-ATT security -> EXT	0.081	0.054	1.50	.135	
Constant -> EXT	5.246***	0.049	106.29	.000	
Covar (e.INT, e.EXT)	0.473***	0.066	7.13	.000	
Covar(P-ATT security, interaction)	-0.110*	0.053	-2.08	.038	

*: $p < .05$; **: $p < .01$; ***: $p < .001$. Sample size: 431. A-ATT: Adolescent attachment; P-ATT: Parental attachment; INT: Internalizing problems; EXT: externalizing problems; Covar: covariance.

Model 8 was used to examine the interaction effects of adolescent attachment anxiety, adolescent attachment avoidance, parental attachment anxiety, and parental attachment avoidance (see Table 3.6). The model was shown to have good fit, χ^2 (66, $N = 431$) = 57.573, $p = .761$, $RMSEA = 0.00$ [90% $CI = 0.00, 0.02$], $PCLOSE = 1.000$, $CFI = 1.00$, $TLI = 1.02$.

For internalizing problems, the path coefficient of the interaction term was significant ($\beta = -0.119$). Thus, the relationship between adolescent attachment and internalizing problems associated with each style of parental attachment strategies was analyzed (see Figure 3.2).

When parents had a secure attachment style, the interaction between adolescent attachment anxiety and avoidance did not approach significance ($ME = -0.039$, $SE = 0.059$, $p = .505$, $\beta = -0.048$). Internalizing problems were significantly, positively associated with adolescent attachment anxiety ($ME = 0.505$, $SE = 0.083$, $p < .001$, $\beta = 0.466$), but not avoidance ($ME = 0.006$, $SE = 0.083$, $p = .942$, $\beta = 0.010$).

When parents had a dismissing attachment style, the interaction between adolescent attachment anxiety and avoidance approached significance ($ME = 0.174$, $SE = 0.095$, $p = .067$, $\beta = 0.221$). Further analyses of the interaction effect revealed that the association between teens' internalizing problems and attachment anxiety was not significant when their attachment avoidance was low ($ME = -0.169$, $SE = 0.219$, $p = .441$, $\beta = -0.153$), but significant when their attachment avoidance was high ($ME = 0.320$, $SE = 0.163$, $p < .05$, $\beta = 0.288$). However, the association between teens' internalizing problems and their attachment avoidance was not significant regardless of the teens' attachment anxiety level (Low anxiety: $ME = -0.161$, $SE = 0.143$, $p = .260$, $\beta = -0.158$; High anxiety: $ME = 0.274$, $SE = 0.193$, $p = .155$, $\beta = 0.284$).

When parents had a preoccupied attachment style, the interaction between adolescent attachment anxiety and avoidance did not approach significance ($ME = 0.048$, $SE = 0.093$, $p = .605$, $\beta = 0.060$). Internalizing problems were significantly, positively associated with adolescent attachment anxiety ($ME = 0.561$, $SE = 0.167$, $p < .01$, $\beta = 0.508$), but not avoidance ($ME = 0.206$, $SE = 0.123$, $p = .096$, $\beta = 0.208$).

When parents had a fearful attachment style, the interaction between adolescent attachment anxiety and avoidance did not approach significance ($ME = -0.120$, $SE =$

0.080, $p = .136$, $\beta = -0.147$). Internalizing problems were significantly, positively associated with adolescent attachment anxiety ($ME = 0.501$, $SE = 0.098$, $p < .001$, $\beta = 0.468$) as well as avoidance ($ME = 0.246$, $SE = 0.083$, $p < .01$, $\beta = 0.250$).

For externalizing problems, the path coefficient of the interaction term did not approach significance ($\beta = -0.066$). Thus, the four-way interaction effect was not analyzed with respect to externalizing problems.

Table 3.6. Path Analysis Results Examining the Four-way Interaction Effects of Adolescent Attachment Anxiety and Avoidance, and Parental Attachment Anxiety and Avoidance on Adolescent Problem Behaviours.

Path	Coef	SE	z	p	R ²
A-ATT anxiety -> INT	0.410***	0.059	6.92	.000	0.346
A-ATT avoidance -> INT	0.128*	0.051	2.51	.012	
P-ATT anxiety -> INT	0.000	0.060	0.01	.994	
P-ATT avoidance -> INT	-0.010	0.074	-0.13	.893	
A-ATT anxiety X A-ATT avoidance -> INT	0.016	0.039	0.40	.690	
A-ATT anxiety X P-ATT anxiety -> INT	0.096	0.050	1.91	.057	
A-ATT anxiety X P-ATT avoidance -> INT	-0.118	0.065	-1.81	.071	
A-ATT avoidance X P-ATT anxiety -> INT	0.077	0.044	1.77	.077	
A-ATT avoidance X P-ATT avoidance -> INT	0.022	0.050	0.44	.659	
P-ATT anxiety X P-ATT avoidance -> INT	-0.041	0.052	-0.79	.427	
A-ATT anxiety X A-ATT avoidance X P-ATT anxiety -> INT	-0.041	0.033	-1.23	.218	
A-ATT anxiety X A-ATT avoidance X P-ATT avoidance -> INT	0.011	0.038	0.28	.776	
A-ATT anxiety X P-ATT anxiety X P-ATT avoidance -> INT	0.070	0.046	1.54	.123	
A-ATT avoidance X P-ATT anxiety X P-ATT avoidance -> INT	-0.002	0.038	-0.05	.960	
A-ATT anxiety X A-ATT avoidance X P-ATT anxiety X P-ATT avoidance -> INT	-0.073*	0.033	-2.18	.029	
Constant -> INT	5.756***	0.072	80.46	.000	
A-ATT anxiety -> EXT	0.191***	0.045	4.24	.000	
A-ATT avoidance -> EXT	0.207***	0.039	5.34	.000	
P-ATT anxiety -> EXT	-0.062	0.047	-1.33	.182	
P-ATT avoidance -> EXT	0.012	0.057	0.21	.836	
A-ATT anxiety X A-ATT avoidance -> EXT	-0.066*	0.030	-2.20	.028	
A-ATT anxiety X P-ATT anxiety -> EXT	0.094*	0.039	2.42	.015	
A-ATT anxiety X P-ATT avoidance -> EXT	-0.099*	0.050	-1.97	.049	
A-ATT avoidance X P-ATT anxiety -> EXT	0.016	0.034	0.47	.637	
A-ATT avoidance X P-ATT avoidance -> EXT	0.006	0.038	0.14	.885	
P-ATT anxiety X P-ATT avoidance -> EXT	-0.054	0.040	-1.34	.180	
A-ATT anxiety X A-ATT avoidance X P-ATT anxiety -> EXT	-0.027	0.026	-1.04	.297	
A-ATT anxiety X A-ATT avoidance X P-ATT avoidance -> EXT	0.020	0.030	0.67	.502	
A-ATT anxiety X P-ATT anxiety X P-ATT avoidance -> EXT	-0.003	0.035	-0.09	.931	
A-ATT avoidance X P-ATT anxiety X P-ATT avoidance -> EXT	-0.009	0.029	-0.29	.769	
A-ATT anxiety X A-ATT avoidance X P-ATT anxiety X P-ATT avoidance -> EXT	-0.030	0.026	-1.16	.246	
Constant -> EXT	5.286***	0.054	97.42	.000	

*: p < .05; **: p < .01; ***: p < .001. Sample size: 431. A-ATT: Adolescent attachment; P-ATT: Parental attachment; INT: Internalizing problems; EXT: externalizing problems. Covariance paths not shown.

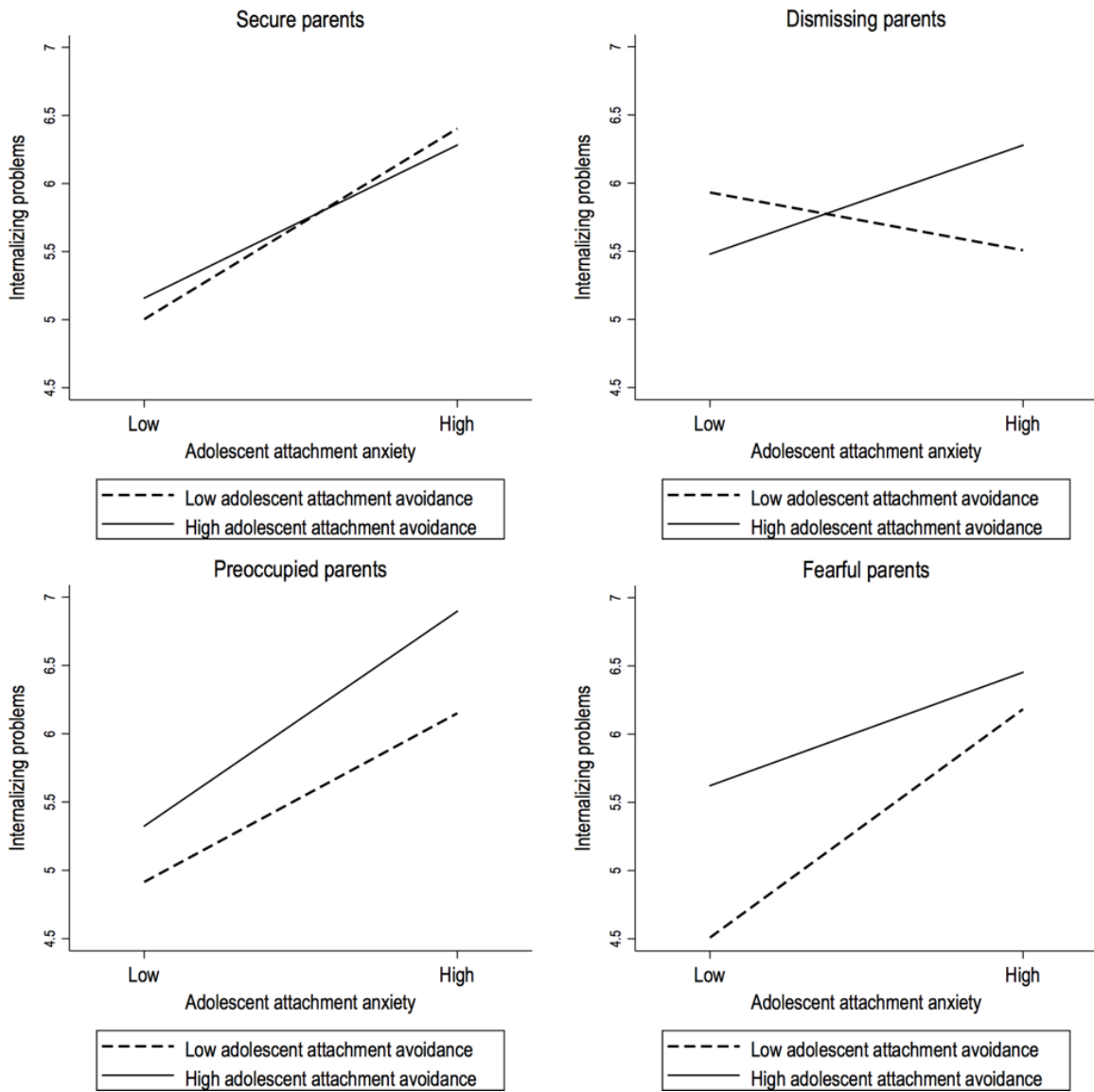


Figure 3.2. Relationships Between Adolescent Attachment and Internalizing Problems by Parental Attachment Styles.

Chapter 4.

Discussion

4.1. General Discussion.

Understanding the modifiable risk and protective factors that play a role in the development and maintenance of problem behaviours among the adolescent population has been a subject of growing interest in mental health research (Kieling et al., 2011). Increasingly, studies have shown that teens' attachment to their caregivers is one factor that is closely linked to their emotional and behavioural functioning levels (Brumariu & Kerns, 2010; Savage, 2014). However, the role that parents' own attachment strategies may play in the development and maintenance of problem behaviours among teens is rarely explored. The present study aimed to address this research gap and examined the direct and indirect impacts that parents' own attachment strategies might have on teens' emotional and behavioural functioning in a clinical population.

While prior studies found that parents' secure attachment strategies were associated with low levels of problem behaviours among young children and preadolescents (Roskama et al., 2011; Sümer & Harma, 2015), the present study did not find a direct link between parents' secure attachment strategies and adolescent problem behaviours in a clinical sample, and the results did not differ based on parent or youth gender. Prior studies with young children suggest that parents' insecure attachment strategies may contribute to child problem behaviours by increasing children's attachment insecurity (Abbasi, Amiri, & Talebi, 2016; Roskama et al., 2011). However, in the present sample, parents' attachment strategies were not significantly correlated with teens' attachment strategies. This finding was surprising, as significant correlation in attachment security in parent-child dyads has been consistently observed among infants and children (Sette et al., 2015; Verhage et al., 2016). One possible reason for this lack of correspondence between parents' and teens' attachment is the self-report nature of the attachment measure used in the present study. Prior studies that have investigated parent-child attachment concordance often used a semistructured interview to assess parents' mental representations of their childhood experience with caregivers (Verhage et al., 2016), whereas the present study used a self-report measure to assess the

attachment strategies that parents tended to use in their adult relationships. The association between these two types of measures is generally small (Roisman et al., 2007), and thus a significant association between parental adult attachment and adolescent problem behaviours may be found if parental adult attachment was assessed using alternative measures of attachment. Another possible cause of a lack of correspondence between parents' and teens' attachment is the changes in parents' and teens' attachment over time. While infants' and young children's attachment is often similar to their parents', both parents' and children's attachment are subject to change over time, affected by factors such as negative life events and depression (McConnell & Moss, 2011; Sette et al., 2015). Over time, these changes may reduce the similarity in attachment among parent-child dyads.

The present study also investigated the indirect impacts of parental adult attachment on adolescent mental health by examining the moderation effects of parents' attachment strategies on the relationships between teens' attachment strategies and problem behaviours. Consistent with past research (Brumariu & Kerns, 2010; Savage, 2014), teens' attachment security was found to have a protective effect for the teens; the more they used secure attachment strategies, the less internalizing and externalizing problems they experienced. These negative associations between adolescent attachment security and problem behaviours did not differ based on parents' attachment security. However, when the effects of anxious and avoidant attachment strategies were examined, the results revealed a more complex picture.

In the overall sample, teens' internalizing problems were associated with both anxious and avoidant attachment strategies among the teens. The effects of these insecure attachment strategies on internalizing problems were additive, but varied significantly based on parents' attachment strategies. Across the different styles of parental attachment strategies, high levels of adolescent internalizing problems were more consistently and strongly associated with teens' anxious strategies than with their avoidant strategies, even when parents had a secure attachment style. Thus, congruent with past research (Brumariu & Kerns, 2010), the present study suggests that teens' internalizing problems are more strongly associated with their anxious strategies than with their avoidant strategies, indicating that anxious teens are particularly prone to emotional problems.

The results also suggest that teens of avoidant parents may be particularly vulnerable to emotional problems, especially the teens less prone to such problems (i.e. those who tended to use low levels of anxious attachment strategies). Avoidant parents include parents with a fearful or dismissing attachment style. The former use a combination of avoidant and anxious strategies in times of distress, whereas the latter consistently rely on avoidant strategies for distress management. With fearful parents, both anxious and avoidant strategies among the teens, rather than anxious strategies alone, were associated with more adolescent internalizing problems. This elevated risk of internalizing problems associated with avoidant strategies was more prominent among the teens who used low levels of anxious strategies. With dismissing parents, teens who used low levels of anxious strategies reported high levels of internalizing problems similar to those reported by anxious teens, even when they had a secure attachment style. That is to say, the protective effect of teens' secure attachment was no longer present when the parents consistently relied on avoidant strategies for distress management. These findings are consistent with the literature suggesting that parents' avoidant attachment strategies may have negative impacts on their secure base support provision. Specifically, avoidant parents are less likely to engage in sensitive and responsive parenting practices, particularly when their children's distress levels are high (Flykt, Kanninen, Sinkkonen, & Punamäki, 2010; Jones et al., 2015). This reduces the likelihood of distressed children successfully obtaining support from these parents. Dismissing parents in particular are shown to be less aware of and less sensitive to their children's internalizing emotions such as fear and sadness (DeOliveira, Moran, & Pederson, 2005). As a result, they may not notice or correctly interpret their children's distress signals, further reducing the likelihood of them providing adequate secure base support to their children.

Adolescent externalizing problems were associated with both anxious and avoidant attachment strategies among the teens, and the strengths of these associations were comparable, which is consistent with the literature (Fearon et al., 2010; Madigan et al., 2016). Furthermore, teens' anxious and avoidant strategies interacted to predict teens' externalizing problems, such that more use of anxious (or avoidant) strategies was not associated with more externalizing problems when the use of avoidant (or anxious) strategies was already high. This indicates that there was a lack of additive effect of adolescent anxious and avoidant strategies in the present sample. Additionally,

the relationships between teens' anxious and avoidant strategies and externalizing problems did not differ based on parents' attachment strategies. A possible reason for the lack of additive effect of teens' anxious and avoidant strategies, as well as the lack of moderation effect of parental adult attachment, is a ceiling effect, as the high-risk teens recruited for the present study tended to have high levels of externalizing problems. The limited variability and range of externalizing problem scores may have prevented a significant additive or moderation effect from being detected. Another possible reason is that parents, particularly avoidant parents, may respond differently to externalizing affect (e.g., anger, aggression) than to internalizing affect (DeOliveira et al., 2005). The parents recruited for this study in particular may be more likely to respond to externalizing affect expressed by their teens than parents in general, as these parents signed up for a parenting program in an attempt to address their children's behaviour problems.

Lastly, although prior studies indicated that mothers' and fathers' attachment strategies could have differential implications for their children's mental health (Karabekiroğlu & Rodopman-Arman, 2011; Scharf et al., 2012), the present study did not find any significant gender differences in the relationships between parents' attachment strategies and adolescent problem behaviours, or in the moderation effects of parents' attachment security on the relationship between teens' attachment security and problem behaviours. However, the small sample size of father-teen dyads in the present study ($n = 59$; 13.7% of the total sample) may have prevented the detection of a significant group difference (Lubke & Dolan, 2003), and gender differences in the interaction effects of parents' and teens' anxious and avoidant strategies were not examined due to the complexity of the analysis model. Additionally, as fathers seldom participate in parenting programs (Bayley, Wallace, & Choudhry, 2009), the fathers that took part in the present study may not be representative of fathers in the general population. As a result, the non-significant gender differences reported in the present study should be interpreted with the limitations of the study design in mind.

4.2. Limitations.

There are several limitations to the present study. First, only one parent from each household was included in the analyses, and thus the effect of the other parent's attachment strategies was not accounted for. Past research suggests that mothers' and

fathers' attachment strategies and behaviours can make independent contributions to their children's emotional well-being (Esbjørn et al., 2013; Liu, 2008; Sheeber, Davis, Leve, Hops, & Tildesley, 2007). Mothers' and fathers' parenting behaviours can also interact to affect teens' emotional and behavioural functioning (Flouri & Buchanan, 2003; McKinney & Renk, 2008). Given these findings, it is possible that the impact of one parent's attachment strategies on the teens' mental health could be influenced by the other parent's attachment strategies. Unfortunately, for most recruited families only one parent completed the survey package, and thus the interaction effect of two parents' attachment strategies could not be examined. However, given that few studies have examined the dyadic interaction effect of parents' attachment strategies and teens' attachment strategies on adolescent mental health, the present study is an important first step in exploring this subject.

Second, the present study conceptualized the moderation effect of parental adult attachment as a result of the adverse influence of parents' avoidant attachment strategies on their secure base support. However, parents' actual secure base support behaviours were not examined. In future studies, it would be interesting to examine if the moderation effect of parental attachment strategies could be explained by parents' secure base support provision or parents' response to teens' internalizing distress.

Third, due to the cross-sectional nature of the data, no conclusions can be drawn with respect to causal relationships. However, the findings of this study indicate that the association between adolescent attachment strategies and adolescent problem behaviours could be influenced by parents' attachment strategies, and thus longitudinal research is needed to investigate the causal implications of parents' attachment strategies in the development of problem behaviours among teens.

Fourth, the clinical sample used in this study is high-risk in nature, and thus the results may not generalize to low-risk samples. Particularly, the relatively securely attached teens in this study are likely to be less secure than teens in the general population. Therefore, future research is needed to examine if parents' attachment strategies have similar mental health implications for teens in low-risk populations.

Lastly, as mentioned previously, mother-teen dyads were overrepresented in the present sample, which may have obscured significant gender differences in the findings.

Thus, future studies should include a larger number of father-teen dyads in order to examine the potential gender differences in the moderation effects of parental adult attachment.

4.3. Conclusions and Future Directions.

This study is one of the first studies to examine the moderation effects of parents' attachment strategies on the relationships between teens' attachment strategies and problem behaviours among a high-risk adolescent population. While parents' insecure attachment strategies did not appear to directly contribute to problem behaviours among teens, the relationships between teens' attachment strategies and internalizing problems, but not externalizing problems, were moderated by parents' attachment strategies. The findings highlight the adverse implications of parents' avoidant attachment strategies for their adolescent children's emotional functioning, especially among the teens who are typically at lower risk of emotional problems. Importantly, the protective effect of teens' secure attachment strategies was no longer present when the parents had a dismissing attachment style. It is possible that avoidant parents, particularly those with a dismissing attachment style, are less likely to correctly recognize and interpret, as well as respond to, their adolescent children's internalizing distress signal, leaving the teens vulnerable to experiencing emotional problems. This may be particularly problematic during adolescence, because teens' push for autonomy, a characteristic of adolescence (McElhaney, Allen, Stephenson, & Hare, 2009), may be more likely to be mistaken by avoidant parents as signs that the teens do not need their help or support, reducing the likelihood of the parents meeting the teens' attachment needs. As a result, the teens' vulnerability to emotional problems would be heightened. Thus, intervention efforts that enhance parents' understanding of how their teens express their attachment needs may be particularly helpful for avoidant parents in reducing the risk of emotional problems among their adolescent children, especially the teens less prone to emotional problems.

Given that few studies to date examined the moderation effects of parents' own attachment strategies on the relationship between teens' attachment strategies and mental health, future research with high-risk and low-risk populations should be conducted to replicate and expand the findings reported in the present study. It is also important to investigate how parents' attachment strategies affect their secure base

support behaviours, and whether their secure base support is the mechanism underlying the moderation effect of parents' attachment strategies. Finally, it would be interesting to examine how parents' attachment strategies may moderate the effectiveness of intervention programs that aim to reduce adolescent problem behaviours by promoting attachment security among teens.

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