A Family Affair: Investigating How Parents' Depressive Symptoms Impacts Family Cohesion Through Couple and Parent-child Hostility and Withdrawal

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Abstract

Depressive symptoms can be extremely distressing for the impacted individual, but the deleterious outcomes extend beyond the individual. Yet, the impact on families is frequently overlooked, and little is known about how parents' depressive symptoms affect family outcomes. The current research investigated whether parents' depressive symptoms predicted lower family cohesion via greater hostility and withdrawal in both couple and parent-child relationships. Each parent from a community sample of 285 mixed-gender couples (N = 570) completed self-reported measures of depressive symptoms, couple and parent-child hostility and withdrawal, and family cohesion. Families then attended a laboratory visit where they were video-recorded engaging in a 5-minute free-play interaction, which trained coders used to rate couple and parent-child hostility and withdrawal, as well as overall family cohesion. Structural equation modelling revealed that parents' depressive symptoms predicted lower self-reported cohesion via couples' self-reported hostility and withdrawal. Couples' hostility and withdrawal also spilled over into self-reported parent-child withdrawal, which in turn predicted lower cohesion. However, these predicted associations were not replicated with the observational data. The self-report results indicate that parents' evaluations of the couple relationship may play a pivotal role in determining whether parents' depressive symptoms go on to negatively impact perceived family cohesion. These findings offer novel evidence identifying parents' depressive symptoms as a risk factor for family cohesion and carry important clinical implications. The results also offer important future directions, including methodological recommendations for self-report and observational assessments, as well as examining the role of children's contribution to family functioning.

Keywords: parents' depressive symptoms, family cohesion, couple, parent-child, hostility, withdrawal

Dedication

Family is a central theme of my thesis, and so I dedicate this to my mother, Nila Patel, you are the epitome of family.

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Ehara taku toa i te toa takitahi, engari he toa takitini —

(My success is not my own, but from many others)

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Depression, or elevated depressive symptoms can be both debilitating and pervasive and is on the rise with numerous personal, social and economic costs. Depression involves a range of symptoms, including depressed mood (feelings of sadness, emptiness, hopelessness, worthlessness and/or guilt), fatigue and irritability, along with a range of cognitive and behavioural symptoms, such as rumination, difficulty concentrating, slowed processing, negative cognitive biases, psychomotor agitation or retardation, and diminished interest or pleasure in activities (American Psychiatric Association, 2013). Depressive symptoms also make maintaining and enjoying social interactions challenging, impairing interpersonal relationships (Kupferberg et al., 2016). Furthermore, depressive symptoms can increase one's dependence on the health care system, while simultaneously decreasing participation in the workforce, carrying a significant economic cost (Hirschfeld et al., 2000). Additionally, understanding the widespread implications of depression has only grown in importance, with recent events such as the COVID-19 pandemic triggering a surge in the number of adults reporting experiencing depressive symptoms (Ettman et al., 2020).

The World Health Organization (2021) estimates that 5% of the global adult population experiences depression at some point in their lives; however, in New Zealand the prevalence rate is significantly higher. Data from the most recent Ministry of Health (2019) survey indicated that 15.7% of a randomly selected sample of the New Zealand population reported having been diagnosed with depression, which is relatively consistent with New Zealand depression rates from the previous seven years (Ministry of Health, 2019). Importantly, the prevalence of experiencing depressive symptoms is estimated to be much higher than the reported 15.7% due to factors such as under-reporting of symptoms and not meeting the threshold for a clinical diagnosis (Ministry of Health, 2019). Furthermore, the

number of people impacted by depressive symptoms extends beyond the individuals, with depressive symptoms having a ripple effect into individuals' wider networks, such as their families.

Depressive symptoms widespread impact on family relationships means individuals' depressive symptoms also affect their partners and children. For example, it is well-established that depressive symptoms negatively impact couple outcomes, including reduced emotional disclosure (Kahn & Garrison, 2009), impaired communication (Chiariello & Orvaschel, 1995), greater relationship dissatisfaction (Coyne et al., 2002; Davila et al., 1997; Gabriel et al., 2010) and increased conflict (Cummings et al., 2005; Kahn et al., 1985; Kouros et al., 2008). In addition, individuals' depressive symptoms also predict poorer outcomes in their children, such as children's increased social impairment (Billings & Moos, 1983; Weissman et al., 1997), academic difficulties (Ahun et al., 2020; Wright et al., 2000), internalising and externalising problems (Downey & Coyne, 1990; Sturge-Apple et al., 2006) and child psychopathy (Beardslee et al., 1983; Fendrich et al., 1990).

Despite a large body of research showing that adults' depressive symptoms negatively affect both couple and parent-child relationships, these represent separate bodies of literature: one focusing on couple relationships and one focusing on parent-child relationships. Yet, both couple and parent-child relationships are part of a wider family system, and each family subsystem reciprocally influences the others (Cox & Paley, 1997; Du Rocher Schudlich & Cummings, 2007). Thus, the links shown in prior research may be due to depressive symptoms influencing couple and parent-child relationships through similar processes, or depressive symptoms may have a stronger impact on one family subsystem (i.e. couple relationships) that then indirectly affects the other (i.e. parent-child relationships). Therefore, a more complete understanding involving examining how depressive symptoms affect both types of relationships within the family system is required.

A family systems perspective that considers the ways that depressive symptoms affect both couple and parent-child relationships also emphasises that depressive symptoms should adversely affect the overall family system. One key indicator of family-level functioning is family cohesion, which encompasses the quality or closeness between all members in the family unit. Family cohesion is reflected in the strength of the emotional bond between family members and comprises of two key elements (Johnson et al., 2001; Olson et al., 1983). Firstly, cohesion involves a high level of positive affect between family members, characterised by expressions of warmth, closeness and supportiveness (Davies et al., 2004; McHale & Fivaz-Depeursinge, 1999; Tissot et al., 2019). Secondly, cohesion involves mutual involvement of all family members, characterised by engagement and participation, cooperation, and a sense of unity and togetherness across all family members (Coe et al., 2018; Johnson et al., 2001; McHale & Fivaz-Depeursinge, 1999; Olson et al., 1983; Tissot et al., 2019).

Furthermore, for families to be cohesive, provisions of positive affect and mutual involvement must be done appropriately, within the context of well-defined but flexible boundaries (Coe et al., 2018). Well-defined boundaries require a degree of compartmentalisation to prevent any distress within one subsystem from proliferating into the broader family unit (Coe et al., 2018; Sturge-Apple et al., 2010). However, depressive symptoms such as slowed processing, rumination, and difficulty concentrating may make the cognitively demanding task of compartmentalisation challenging (American Psychiatric Association, 2013). Subsequently, containing difficulties associated with depressive symptoms (e.g., increased conflict; Henderson et al., 2003) within one subsystem may be challenging; thus, this distress may spill over into other family subsystems, consequently negatively impacting the family as a whole. Therefore, given depressive symptoms can

compromise family boundaries, it is important to evaluate both the couple and parent-child subsystems to understand the overall family system.

However, prior investigations have not fully examined how depressive symptoms affect the family unit as a whole. Not only is this important to advance understanding of the way depressive symptoms affect family relationships, but the lack of acknowledgement of the impact of depressive symptoms on the family also creates a discourse of outcomes centred on the individual, resulting in family outcomes often being overlooked in research and subsequently clinical practice (Gladstone et al., 2011). The current research aims to address this issue by examining whether the difficulties that depressive symptoms create across family subsystems undermine broader family functioning as indexed by family cohesion. In the following sections, I provide a detailed review of existing evidence that depressive symptoms predict (1) greater hostility and withdrawal within couple relationships and (2) greater hostility and withdrawal in parent-child relationships. I summarize the main themes and conclusions in Table 1 to help guide the reader through the systematic review in a way that allows connections to be drawn across each process examined. In each section, I outline the likely reasons for these effects and the ways in which these disruptions in both types of family relationships should diminish family cohesion. I end by outlining the aims of the current study in examining how the hostility and withdrawal in the couple and parent-child relationship should undermine broader family cohesion.

Table 1

Summary of the Ways Depressive Symptoms May Generate Hostility and Withdrawal in Couple and Parent-child Relationships and its Impact on Cohesion

	Definition	*Hostility (greater negative interactions)*	*Withdrawal (decreased positive interactions)*	*Combined*
Couple subsystem (Actor)	Individuals' depressive symptoms can create their own hostility and withdrawal toward partners	• Low mood, greater anger and irritability translate into angry, hostile expressions • Negative bias results in greater criticism and hostility • Social skills deficit theory: depressed individuals lack competence in interpersonal behaviour leading to hostile communication	• Lethargy and anhedonia result in disengagement from interactions • Psychological and physiological impacts of depressive symptoms lead to sexual withdrawal • Social skills deficit theory: communication difficulties lead to emotional withdrawal • Social withdrawal hypothesis: depressive symptoms result in behaviour that maintains or increases withdrawal • Feelings of hopelessness, pessimistic cognitive bias and slowed processing result in withdrawn conflict tactics • Negative bias and rumination translate into emotional withdrawal	• Hostility and withdrawal expressed in a single interaction • Non-verbal hostility facilitates withdrawal • Fluctuating between hostility and withdrawal in a mutually maintaining pattern
Couple subsystem (Partner)	Actors' depressive symptoms can create partners' hostility and withdrawal	• Emotional contagion results in actors' low mood and hostility getting passed on to partners • Feelings of frustration and burden translate into hostile communication	• Contagion results in actors' withdrawal getting passed onto partners • Social exchange theory of equity: unreciprocated engagement prompts withdrawal • Feelings of hurt and rejection translate into withdrawal	• Hostile-withdrawn pattern between actor and partner • Both actor and partner express hostility and

	Definition	*Hostility (greater negative interactions)*	*Withdrawal (decreased positive interactions)*	*Combined*
		• Partners may deliberately match actors' hostility	• Feelings of tiresomeness and frustration result in withdrawing from interactions • Withdrawal through self-silencing	withdrawal during conflict
Parent-Child subsystem (Indirect)	Parents' depressive symptoms create hostility and withdrawal in the couple relationship which spills over to parenting	• Hostility expressed in the couple relationship (due to depressive symptoms) creates negative mood, which spills over leading to hostile parenting	• Withdrawal expressed in the couple relationship (due to depressive symptoms) creates an internal state of noise, emotional indifference, and neglect, spilling over and resulting in withdrawn parenting	
Parent-Child subsystem (Direct)	Parents' depressive symptoms directly creates hostility and withdrawal toward children	• Irritability translates into hostile parenting behaviour • Negative bias, irritability, and lethargy result in hostile disciplining	• Ruminative thoughts, lethargy, and psychomotor retardation translates into withdrawn parenting behaviour • Negative bias, feelings of helplessness, and lethargy results in withdrawn discipline	• Parents alternate between hostile and lax parenting
Cohesion	Family cohesion is made up of (1) positive affect and (2) mutual engagement	• Hostility may reduce cohesion by reducing positive affect, characterised by decreased expressions of warmth, closeness and supportiveness	• Withdrawal may reduce cohesion by reducing mutual engagement, characterised by less engagement and participation by all family members, cooperation and a sense of unity and togetherness	• Amplifying the impact of reduced positive affect and mutual engagement

The Effects of Depressive Symptoms on Couple Relationships

Family systems theorists have referred to the couple relationship as the "cornerstone" of the family unit (Sturge-Apple et al., 2006), highlighting its importance in influencing the overall functioning of the family. If individuals' depressive symptoms weaken the couple relationship, overall family functioning, such as family cohesion, is likely to suffer. Prior research has provided evidence that depressive symptoms within the couple subsystem increase the risk of experiencing disruptions in couple relationships (Davila et al., 1997; Henderson et al., 2003). The functional impairments due to depressive symptoms may cause a range of interpersonal difficulties in the couple relationship, which can put a strain on both partners, thereby reducing relationship quality. In particular, the evidence I review below (and summarise in Table 1) indicates that depressive symptoms can trigger (1) increased negative interactions, characterised by greater levels of hostility between partners, and (2) decreased positive interactions, characterised by one or both partners withdrawing from the relationship. In this section, I consider actor effects involving how one person's depressive symptoms are associated with their own relationship behaviour and evaluations. Given the dyadic nature of couple relationships, I also review evidence for partner effects involving the associations between one person's depressive symptoms and their partner's couple outcomes. Thus, I outline how parents' depressive symptoms can produce greater hostility, withdrawal, or both, in actors and partners, disrupting the couple relationship and thereby damaging family cohesion.

Depressive Symptoms and Hostility: Actor and Partner Effects

There are at least three key ways that actors' depressive symptoms may create hostility that can negatively impact overall relationship functioning (see Table 1). First, depression is by nature accompanied by low moods that can create hostile relationship interactions. For example, Mastrotheodoros et al. (2020) examined women's daily reports of

sadness and interparental hostility over a 5-day period and found that greater maternal sadness predicted greater next-day hostility toward fathers, suggesting a common depressive symptom of low mood can convert into hostility in close relationships. Other common symptoms of depression include increased anger and irritability (Painuly et al., 2005), which can make interactions challenging and translate into verbal aggression. For example, Biaggio and Godwin (1987) found greater reported severity of depressive symptoms was associated with more intense hostile emotions, resulting in increased outward displays of anger.

Second, depressive symptoms often involve negative thinking that can bias people's outlook of their relationship and partner, increasing hostility (Vanhee et al., 2018). For example, Gustavson et al. (2012) collected both partners' reports of aspects of their relationship, such as time spent together, relationship expectations, responses to conflict and relationship satisfaction. Accounting for the association across both partners' views of their relationship, the results highlighted that people with greater depressive symptoms had more negative assessments of their relationship than their partner did, indicating that their view of the relationship was negatively biased which may lead to greater hostility. Depressive symptoms can also result in biased interpretations of their partner's behaviour, prompting more criticism towards them (Hooley, 1986; Leahy, 2002). Peterson and Smith (2010) investigated intended and perceived criticism in married couples in which one partner had been currently diagnosed with major depressive disorder. Depressed individuals evaluated partners' behaviour more negatively, which in turn was associated with greater intended criticism towards their partner. These findings highlight how the pessimistic cognitive biases, symptomatic of depression, can provoke more hostile behaviour that can be damaging to the relationship.

Third, depressive symptoms often make communication more challenging. The social skills deficit theory suggests that depressed individuals lack competence in their interpersonal

behaviours and consequently are less effective at communicating compared to non-depressed individuals (Segrin, 1990; Segrin & Abramson, 1994). These social skills problems result in individuals engaging in more hostile communication styles with their partners, which is likely to be particularly evident during conflictual interactions. In couples with one member diagnosed with depression, Coyne et al. (2002) found that depressed individuals reported engaging in greater destructive conflict tactics, which were characterised by behaviours such as yelling, insulting their partner, and making threats. These findings were supported in an observational study by Zuroff and Duncan (1999), who found that individuals with greater depressed mood displayed greater overt hostility towards their partner during a video-recorded conflict resolution discussion task, including nonverbal communication (e.g. scowling, snorting) and verbal communication (e.g. criticism, insults, sarcasm).

The research reviewed above provides clear evidence that individuals' own greater depressive symptoms predict greater hostility within relationships (actor effects), but individuals' depressive symptoms may also create dynamics that produce greater hostility by partners (partner effects; Carnelley et al., 1994). Firstly, the interpersonal nature of relationships often results in emotions occurring in tandem. The interactional theory of depression suggests the co-occurrence of negative emotion arises through the process of emotional contagion, where one person's negative affect either consciously or subconsciously gets passed on to another person (Bodenmann & Randall, 2013; Hennig-Thurau et al., 2006). Accordingly, individuals' elevated negative moods can result in partners experiencing greater negative moods and, in turn, hostility. In a qualitative analysis of interviews with couples in which at least one partner had been diagnosed with depression, Sharabi et al. (2016) found that the majority of participants referenced some degree of emotional contagion, with partners crediting the individual's low mood for their own negative affect, which can lead to

hostility. Additionally, rather than passing on low mood, individuals with elevated depressive symptoms may directly pass their hostility onto partners through emotional contagion.

Partners may also feel burdened with having to manage individuals' depressive symptoms, which may result in their own greater irritability and frustration (see Table 1; Van Wijngaarden et al., 2004). Coyne et al. (1987) found that partners living with individuals diagnosed with depression reported greater objective (e.g. missing work, going out less frequently) and subjective (e.g. feeling embarrassed, upset, worried) aspects of burden. These feelings of being burdened can translate into irritability, resulting in more hostile communication between partners through both direct verbal hostility and hostile intonation (Coyne, 1976). Partners' hostility arising from feeling burdened may become particularly salient when partners are required to manage the hostility enacted by individuals' high in depressive symptoms, such as increased negative mood and hostile interactions (Coyne et al., 2002). Finally, partners may deliberately match levels of hostility by responding to individuals' hostility with increased aggression. Shelton and Harold (2008) found that depressive symptoms in one partner predicted increases in overt and covert hostile conflict behaviours in both partners over a 2-year period. One explanation for these partner effects could be that individuals' increased hostility during conflictual interactions provokes hostility in partners, creating a reciprocating hostile relationship environment.

As summarised in Table 1, all of these processes across both actors and partners create greater hostility within the relationship diminishing family cohesion through increased reports of more frequent hostile communication (Cummings & Davies, 1994), high levels of conflict (Fear et al., 2009), and ultimately greater relationship dissatisfaction (Gustavson et al., 2012; Henderson et al., 2003). Poor relationship quality, characterised by hostility due to depressive symptoms of increased negative mood and perceptions, anger and irritability, should reduce feelings of closeness and emotional bonding between partners. Moreover,

given the partner effects described above, the combination of individuals' and partners' hostility should contribute to decreased feelings of warmth within the relationship. Thus, reduced expressions of closeness and warmth should result in lowered positive affect, the first key element of cohesion (Tissot et al., 2019), consequently deteriorating feelings of relationship cohesion within the couple subsystem and, in turn, family cohesion.

Depressive Symptoms and Withdrawal: Actor and Partner Effects

Alternatively, rather than producing hostility, depressive symptoms may prompt physical and emotional withdrawal, which can diminish overall relationship quality (see Table 1). Depressive symptoms include lethargy and anhedonia (the diminished ability to experience pleasure; Chapman et al., 1976), which may make it challenging for people to engage with their partners. Overwhelming feelings of tiredness can make participation in activities difficult, including interactions with partners (Stadje et al., 2016). Additionally, anhedonia may make time spent with partners less or no longer pleasurable; thus, individuals with elevated depressive symptoms may be less motivated to engage in joint activities (Chapman et al., 1976). Furthermore, this disengagement and subsequent withdrawal reduces the opportunity for depressed individuals to express positive affect towards their partner. Providing some support, Coyne et al. (2002) found that individuals diagnosed with depression reported expressing less physical and verbal affection towards their partner compared to non-depressed individuals, which can further reduce relationship quality.

Depressive symptoms may also result in individuals physically withdrawing from their partner due to a diminished interest in sex. This withdrawal can be due to psychological factors, with individuals experiencing less pleasure and satisfaction from sexual activity, or physiological factors due to the side effects of antidepressant medication, such as sexual dysfunction and a decreased libido (Sharabi et al., 2016). For example, Bodenmann and Ledermann (2008) found that greater self-reported depressive symptoms were associated with

increased sexual dysfunction, characterised by a hyposexual desire, sexual aversion and sexual arousal problems. These findings highlight how the impact of depressive symptoms might contribute to sexual withdrawal from the partner, which can diminish relationship quality given that sex often communicates love and affection as well as enhances emotional closeness (Meston & Buss, 2007).

Additionally, in line with the social skills deficit theory (Segrin, 1990) described above, difficulties in communicating arising from depressive symptoms can create emotional withdrawal from the partner and relationship. The social withdrawal hypothesis also proposes that depressive symptoms, such as feelings of sadness, hopelessness and emptiness, result in behaviours that maintain or increase interpersonal distance (Girard et al., 2014). In two studies assessing general and specific perceived disengagement from the relationship, Barry et al. (2019) found that greater depressive symptoms were consistently associated with higher levels of disengaged communication, such as less frequent dialogue, wanting to end dialogue quickly (e.g. agreeing or not asking questions), and ignoring their partner. This type of communicative disengagement or withdrawal may become particularly salient during conflictual interactions. In particular, feelings of hopelessness and pessimistic cognitive bias that often feature within depressive symptoms can be exacerbated during arguments (Ellison et al., 2016) and may result in individuals anticipating conflictual interactions to go poorly and subsequently withdrawing from the interaction before this outcome can actualise (Barry et al., 2019). Additionally, slowed processing is often present with depressive symptoms, which can limit the availability of additional cognitive resources for processing relationship difficulties during conflictual interactions (Callaci et al., 2020). Consequently, individuals may engage in less cognitively demanding conflict techniques, such as withdrawal (i.e. silent treatment) when faced with conflict (Rittenour et al., 2019).

Negatively biased thinking that comes along with depressive symptoms may extend beyond conflict into the overall outlook on their partner and relationship, subsequently fostering emotional withdrawal. Using qualitative analysis of open-ended questions with couples in which at least one partner had been diagnosed with depression, Sharabi et al. (2016) revealed that negative cognitive bias led to individuals perceiving their partner as less understanding and frequently feeling uncertain about the status and future of their relationship. Additionally, revealing the invisible effects of depression, partners acknowledged the individuals' misunderstanding and uncertainty impacted their relationship; however, they did not attribute these detrimental effects to individuals' depression the way individuals did, instead putting the onus directly on individuals (Sharabi et al., 2016). These invisible effects can further consolidate individuals' feelings of being misunderstood, sparking increased negative thoughts about their partner and relationship and, in turn, promoting increased withdrawal. Finally, depressive symptoms are strongly associated with rumination, which involves persistently focusing attention inwards on negative emotional states, behaviours, and events (Lavender & Watkins, 2004). Rumination takes up a substantial amount of cognitive energy, reducing individuals' capacity to engage with their partners. The subsequent absorption by ruminative thoughts may thus unintentionally produce greater withdrawal from the partner.

The above research describes the ways that individuals' greater depressive symptoms can predict their own greater withdrawal (actor effects), but these processes also may prompt withdrawal by the partner (partner effects; see Table 1). A similar process of contagion as described with regard to hostility (Bodenmann & Randall, 2013; Hennig-Thurau et al., 2006) may also be evidenced with withdrawal, with actors' withdrawal consciously or subconsciously transferring across to promote partners' withdrawal. Additionally, the social exchange theory of equity suggests that people seek reciprocity in relationships (Buunk &

Schaufeli, 1993). Thus, if partners feel that their level of engagement in the relationship is not reciprocated due to actors' withdrawal, they may become unsatisfied and also withdraw (Schaufeli, 2006). Furthermore, actors' withdrawal creates emotional distance, which can induce feelings of hurt and rejection in partners (Kahn & Garrison, 2009), increasing their risk of withdrawing from the relationship. Supporting this, Deng et al. (2019) found perceived rejection was associated with greater withdrawal, characterised by decreased willingness to engage in subsequent social interactions.

Partners may also withdraw from their relationship in response to individuals' depressive behaviour. For example, feelings of worthlessness, symptomatic of depression, may cause individuals to engage in excessive reassurance-seeking behaviour by continuously requesting reassurance regarding their self-worth from their partner (Joiner et al., 2001). However, partners may find this constant reassurance seeking tiresome and consequently withdraw instead of offering reassurance. Starr and Davila (2008) found that when individuals higher in depressive symptoms engaged in excessive reassurance-seeking, partners tended to respond with withdrawing behaviours, such as displaying an unwillingness to interact. Consequently, depressed individuals perceive their partners' withdrawal as rejection, exacerbating their feelings of worthlessness and thus requiring even more reassurance, creating a cycle of individuals' appeals for reassurance and partners' withdrawal. Additionally, the depressive symptom of negatively biased thinking (Gustavson et al., 2012) may result in any reassurance offered by partners to be interpreted as disingenuous and therefore rejected by individuals, increasing partners' frustration and decreasing the likelihood of partners offering further reassurance (Joiner & Timmons, 2009).

Partners may also withdraw or appear to withdraw through engaging in self-silencing behaviour, which involves inhibiting their thoughts, feelings and behaviours (Jack, 1991; Maji & Dixit, 2019). The nature of depression (i.e., low mood, feeling helpless) often evokes

sympathy (Lee et al., 2019), so partners may self-silence (e.g., outwardly fake compliance while internally feeling angry) to avoid further upsetting the individual. Additionally, partners in depressive relationships routinely report feeling unsatisfied in their relationship (Gustavson et al., 2012), which can also elicit self-silencing behaviour. This was supported by Whiffen et al. (2007), who found that partners in long-term relationships who reported being less satisfied in their relationship engaged in more self-silencing behaviours. However, hiding true feelings can create a sense of divided self, which may leave partners feeling more resentful and at increased risk of experiencing depressive symptoms themselves. Self-silencing also becomes more prominent during conflictual interactions to avoid, minimise, or prevent conflict (Jack, 1991). Given that depressive relationships are often fraught with conflict, partners may engage in greater self-silencing behaviour to avoid discussing interpersonally challenging thoughts and feelings (Du Rocher Schudlich et al., 2011). Supporting this, Whiffen et al. (2007) found that relationships perceived as being more conflicted were associated with increased self-silencing behaviour. While self-imposed silencing may be an effective short-term strategy for avoiding conflict and managing dissatisfaction, withdrawing through self-silencing can be costly over time for both the partner and the relationship.

The effects of depressive symptoms on withdrawal as summarised in Table 1, outline another way in which depressive symptoms are likely to undermine family cohesion. Withdrawal from both actors and partners reduces the amount of time couples spend together, thereby limiting shared positive experiences and decreasing feelings of intimacy (Bodenmann & Randall, 2013) and creating interpersonal distance (Barry et al., 2019). Individuals' withdrawal due to depressive thinking patterns, lethargy, anhedonia, decreased sex drive, slower processing and feelings of hopelessness and worthlessness should all contribute to decreased engagement and participation with partners. Partners' withdrawal in response to

individuals' depressive symptoms may also perpetuate individuals' depressive symptoms, maintaining the dysfunctional processes in their relationship. Support can buffer against the negative impact of depressive symptoms on the relationship, decrease conflict escalation, and increase feelings of emotional intimacy (Cutrona, 1996). However, partners' withdrawal from their relationship minimises the amount of support they can offer, leaving their relationship vulnerable to detrimental effects of depressive symptoms. Furthermore, partners' unresolved feelings of frustration and resentment should reduce a sense of unity and togetherness within the couple subsystem. Accordingly, couples should experience limited opportunities to foster mutual engagement, which is the second key element of cohesion (McHale & Fivaz-Depeursinge, 1999), consequently diminishing cohesion within the couple subsystem and, subsequently, the family.

Depressive Symptoms: Combination of both Hostility and Withdrawal

The above research suggests that depressive symptoms may be associated with greater hostility or withdrawal for both actors and partners. However, it is possible that both hostility and withdrawal are expressed together in the couple subsystem, within and between actors and partners (see Table 1). Individuals with greater depressive symptoms may engage in both hostile and withdrawn communication toward their partner in various ways. Firstly, individuals may simultaneously express hostility and withdrawal towards their partners in a single interaction. Gabriel et al. (2010) observed that individuals diagnosed with depression engaged in longer and more frequent hostile (e.g., interruption, criticism, domineering, defensiveness) and withdrawn (e.g., decreased eye contact, interest/curiosity, emotional self-disclosure) communication toward their partner during a 5-minute videotaped interaction. Secondly, in line with the social withdrawal hypothesis (Girard et al., 2014) described above, individuals may use non-verbal hostility to facilitate withdrawal from social interactions. Depressive symptoms of slowed cognitive processing and lethargy can make verbal

communication challenging (Alpert et al., 2001); thus, individuals may use hostile non-verbal communication to maintain or increase interpersonal distance. Girard et al. (2014) coded the facial expressions of individuals diagnosed with depression during videotaped clinical interviews and found that higher reported symptom severity was associated with greater non-verbal hostility, characterised by angry expressions. Given that angry facial expressions can be perceived as threatening (Marsh et al., 2005), partners are less likely to engage with individuals exhibiting hostile expressions, consequently facilitating individuals' withdrawal from the relationship. Lastly, individuals may alternate between hostile and withdrawn behaviour, particularly during conflict. A history of destructive relationship conflict may prompt individuals' withdrawal from their partners to avoid future hostile interactions. However, such withdrawal results in issues and resentment left unresolved, which can build over time and, when eventually discussed, create more emotionally charged and subsequently hostile interactions (Kahn et al., 1985). Thus, individuals with greater depressive symptoms become stuck in a mutually maintaining hostile-withdrawn pattern within their relationship.

A hostile-withdrawn pattern can also be evidenced between individuals and partners. The interpersonal theory of behaviour states that individuals' behaviour can elicit a complementary response in partners (Knobloch-Fedders et al., 2014), suggesting individuals' withdrawal may elicit hostility from partners and vice versa. For example, individuals' withdrawal may result in diminished emotional disclosure within the relationship. In turn, partners may feel shut out, particularly if they value open communication, and subsequently feel frustrated, which may be expressed as hostility (Kahn & Garrison, 2009). Alternatively, individuals may engage in hostile behaviour towards their partners, such as expressing criticism or insults. Subsequently, partners may feel hurt and disengage and dismiss attempts of further communication (Fowler & Dillow, 2011). Providing some support, Uebelacker et

al. (2003) found that greater self-reported depressive symptoms were associated with both actors and partners reporting greater hostile-withdrawn patterns during conflict.

Finally, rather than couples engaging in complementary behaviour during conflict, they both may express hostility and withdrawal simultaneously. Kahn et al. (1985), observed that in couples in which one member was diagnosed with depression, both actors and partners showed greater hostility, characterised by verbal aggression and displays of anger/frustration, as well as greater withdrawal, characterised by avoidance and detachment during a 10-minute videotaped conflict discussion. These findings were supported by Du Rocher Schudlich et al. (2004) in a study assessing conflict resolution across major and minor conflict discussions between partners, with individuals' higher reported depressive symptoms associated with both members' greater observed destructive conflict strategies, characterised by increased verbal hostility and withdrawal.

The impact of both hostile and withdrawn behaviours outlined in Table 1 highlights an additional pathway in which depressive symptoms can attenuate family cohesion. Both simultaneous and alternating expressions of hostility and withdrawal from actors and partners increase negative interactions and decrease positive interactions between partners, which can damage overall relationship quality. Additionally, the detrimental effects hostility and withdrawal produce independently, such as lowered positive affect (Tissot et al., 2019) and reduced mutual engagement (McHale & Fivaz-Depeursinge, 1999), can become amplified. Depressive symptoms may prompt increased hostility, withdrawal, or both depending on a range of factors including the specific symptoms individuals are experiencing, personalities, and personal history (Gustavson et al., 2012). Additionally, depressive symptoms and relationship quality often have a bidirectional relationship; depressive symptoms can result in couple distress, however, couple distress also serves to maintain or exacerbate depressive symptoms (Davila et al., 2003). Subsequently, couples may find themselves caught in a

vicious cycle where it is difficult to establish relationship cohesion and, in turn, family cohesion.

The Effects of Depressive Symptoms on Parent-Child Relationships

A strong parent-child relationship is needed for optimising the overall level of family functioning (Chen et al., 2017). Thus, the impact of parents' depressive symptoms on the parent-child subsystem may also decrease overall levels of family cohesion. Research has repeatedly shown that parents' depressive symptoms can have detrimental effects on children's well-being (Billings & Moos, 1986; Cummings & Davies, 1994; Cummings et al., 2005; Nomura et al., 2002). Depressive symptoms can challenge individuals' ability to meet the demands of parenting, such as sustained levels of engagement, responsivity to children's changing needs, and a high tolerance to difficult behaviour (Cohn & Tronick, 1987). Thus, parents who have greater depressive symptoms may struggle with the onerous nature of parenting, impairing the parent-child relationship. As with the couple subsystem, the review that follows indicates that parents' depressive symptoms are likely to impact the parent-child subsystem through (1) increased negative interactions characterised by greater hostility and (2) fewer positive interactions characterised by increased withdrawal.

Below, and summarised in Table 1, I consider two key pathways through which increased parents' depressive symptoms may create greater hostility, withdrawal, or both towards children. The first pathway involves an indirect pathway between depressive symptoms and the parent-child relationship via the negative affect and exchanges expressed in the couple relationship. The spill-over hypothesis suggests dysfunction within one subsystem (i.e., the couple relationship) can disrupt functioning in another, such as parent-child relationships (Krishnakumar & Buehler, 2000). Thus, hostility and withdrawal generated in the couple relationship by depressive symptoms may spill over or be redirected into parenting. The second pathway involves parents' depressive symptoms directly creating

greater hostility and withdrawal towards children through parenting behaviour and practices. Depressive symptoms impair parents' affect, behaviour, and cognition, diminishing parenting quality (Dix, 1991), which may facilitate a climate that is not conducive for parents and children to foster close bonds. In this section, I outline the evidence for how parents' depressive symptoms can produce greater hostility and withdrawal both indirectly and directly, disrupting the parent-child relationship and ultimately diminishing cohesion.

Depressive Symptoms and Hostility: Indirect and Direct

Depressive symptoms can indirectly create hostility within the parent-child relationship from negative moods arising from hostile exchanges in the couple relationship, spilling over into parenting practices (see Table 1). Conger et al. (1994) examined family conflict and found that greater reported interparental hostility was associated with greater parental hostility (e.g., frequency of criticism, shouting, conflict) reported by both parents and children. These findings highlight how the spill-over effect of negative moods between parents can become more pervasive across the overall family subsystem. Additionally, a 7-day daily diary study assessing conflict spill-over by Sherrill et al. (2017) found greater interparental conflict predicted greater next-day parent-child conflict, suggesting the negative affect arising from couple conflict may linger across days to undermine the parent-child relationship. A meta-analysis by Krishnakumar and Buehler (2000) found hostility from negative couple interactions can spill over into parenting, resulting in suboptimal forms of hostile parental engagement, including harsh, controlling parenting, intense criticism, and using physical disciplining techniques (e.g., spanking) even in the absence of parent-child conflict. Given the multiple ways depressive symptoms can create hostility within the couple relationship (see Table 1), the interconnected nature of family subsystems suggests hostility can transfer into the parent-child relationship, either in the form of hostile spill-over from conflict or parents' general hostile affect.

Depressive symptoms can also directly create hostility within the parent-child relationship (see Table 1). Increased irritability, symptomatic of depression, can translate into parents' hostile communication with children. For example, Panaccione and Wahler (1986) assessed the quality of child-care in mothers using self-reports and home observations. Findings revealed mothers' greater reported depressive symptoms predicted greater reported and observed aversive responses such as slapping, shouting, or other forms of disapproval towards their children. This pattern also was supported in an observational study by Gordon et al. (1989), who found mothers diagnosed with depression engaged in more verbal hostility, characterised by negative evaluations of the children's performance and competence, as well as more hostile affect, including irritation, frustration, and anger towards children compared to non-depressed mothers during a 5-minute interaction task. Furthermore, a meta-analysis revealed maternal depression was significantly associated with a range of hostile parenting behaviours, including negative facial expressions, teasing, and yelling (Galbally & Lewis, 2017).

Depressive symptoms can also make parenting practices challenging, resulting in hostile disciplinary processes. Negatively biased thinking may cause parents high in depressive symptoms to perceive normative child behaviour as more problematic than non-depressed parents (Cummings & Davies, 1994). Brody and Forehand (1986) found mothers' greater reported depressive symptoms were associated with greater perceived child maladjustment. Additionally, increased irritability resulting from depressive symptoms can impact parenting practices; thus, parents may have a lower tolerance to perceived difficult behaviour and engage in harsher punishments (Lovejoy et al., 2000). These symptoms, compounded with lethargy, can result in parents engaging in authoritarian parenting and enforcing unilateral obedience because this strategy requires less cognitive effort than using

persuasion, explanation, and reasoning to manage their child's behaviour (Baumrind, 1966; Downey & Coyne, 1990).

As summarised in Table 1, both direct and indirect processes can create greater hostility in the parent-child subsystem, reducing the quality of the parent-child relationship (Dix, 1991) and, ultimately, family cohesion. The spill-over of hostile affect from the couple relationship into the parent-child relationship can reduce closeness between parents and children (Kouros et al., 2008). Additionally, depressive symptoms of increased irritability, negatively biased thinking, and lethargy can result in parents engaging in more hostile parenting behaviours and practices, consequently decreasing the warmth and supportiveness within the relationship. These processes can combine to reduce the amount of positive affect expressed within the parent-child relationship, which is the first key element of cohesion (Tissot et al., 2019). As a result, cohesion within the parent-child subsystem may be reduced, in turn diminishing family cohesion.

Depressive Symptoms and Withdrawal: Indirect and Direct

Alternatively, instead of expressing hostility, parents may indirectly withdraw from children due to the spill-over of negative affect from the couple relationship (see Table 1). Challenging couple interactions resulting in withdrawal can create an internal state of noise, making it difficult for parents to process information, resulting in reduced sensitivity and slowed responsiveness to children's needs (Donovan et al., 1998). Additionally, parents' withdrawal following couple conflict may engender emotional indifference, which can spill over into the parent-child relationship, further diminishing parental responsiveness. For example, an observational study by Sturge-Apple et al. (2006) found withdrawal during a parental conflict discussion task was a significant predictor of parental emotional unavailability in a subsequent parent-child free-play activity. Furthermore, couple conflict can result in parents' withdrawal through neglect. Parents may become so distracted by the

interparental conflict that they overlook their parental responsibilities, such as household chores or caregiving duties (DiMarzio et al., 2021).

Additionally, parents' higher in depressive symptoms can directly withdraw from children (see Table 1). Firstly, depressive thinking styles often include recurrent, ruminative thoughts (Zetsche et al., 2012). This rumination can result in parental inattentiveness, which may be dangerous for children as parents engage in less supervision and struggle to track children's activities, which can result in obliviousness to potential hazards (Gelfand & Teti, 1990). Furthermore, any attention parents direct to children often lacks intensity (Cox et al., 1987). Another symptom of depression is a lack of energy, which may cause parents to invest less effort into their parenting, resulting in infrequent, slower, and less contingent responsiveness to their children. This fatigue, coupled with psychomotor retardation (another depressive symptom), can combine to predict parents' lowered engagement with their children (Gelfand & Teti, 1990; Lovejoy et al., 2000). For example, Breznitz and Sherman (1987) observed that mothers diagnosed with depression engaged in less frequent vocalisations and slower responsiveness to children's speech compared to non-depressed mothers. All these findings are supported in a large-scale study by Lyons-Ruth et al. (2002), who found parents' greater reported depressive symptoms were associated with fewer reported positive parent-child interactions, characterised by a reduced frequency in parents cuddling, playing, reading, singing, and playing music to their children.

A range of parents' depressive symptoms can also result in withdrawn parenting practices. Negative cognitive bias, coupled with feelings of helplessness, may result in parents perceiving children as more difficult (Donovan et al., 1998), which may be reflected through withdrawn child-management techniques. Additionally, parents may struggle with attending to children's challenging behaviour if they are fatigued. A lack of energy may cause parents to engage in parenting strategies requiring less cognitive effort, such as

withdrawing from rule enforcement and disciplining by disengaging from the interaction or submitting to children's non-compliance (Cummings & Davies, 1994; Downey & Coyne, 1990). However, by doing so, parents inadvertently reinforce children's challenging behaviour, maintaining the problematic interaction pattern and shaping future withdrawal patterns. Additionally, parents may experience negative cognitive bias regarding their own parenting abilities, which may be exacerbated by having a reduced sense of self-esteem and efficacy (Gordon et al., 1989). Lowered self-efficacy may stem from feelings of learned helplessness (Miller & Seligman, 1975), leading to parents believing their parenting strategies will be ineffective regardless of what they try, thus disengaging from any form of parenting practices. For example, Bugental et al. (1984) found that mothers who reported lower self-perceived power were observed engaging in less assertive parenting practices compared to mothers scoring highly in self-perceived power. These results suggest that mothers low in self-perceived power may not believe they have the capacity to enforce rules or discipline and thus withdraw from this responsibility, particularly when faced with children's perceived or actual challenging behaviour.

As with hostility, depressive symptoms can lead to indirect and direct withdrawal by parents, lowering the quality of the parent-child relationship and, in turn, reducing family cohesion (see Table 1). Parents may withdraw from children indirectly via spill-over from the couple relationship or directly via parenting behaviour and practices due to depressive symptoms of rumination, lethargy, psychomotor slowing, negative cognitive bias and lowered self-efficacy. This withdrawal limits opportunities for parents to engage in joint interactions with children, diminishing feelings of togetherness and unity (Tissot et al., 2019). Accordingly, parents are unable to foster mutual engagement with their children, the second key element of cohesion (McHale & Fivaz-Depeursinge, 1999), which may decrease levels of cohesion within the parent-child subsystem, and consequently within the family.

Depressive Symptoms: Combination of Hostility and Withdrawal

The research reviewed above indicates that greater parents' depressive symptoms can increase hostility or withdrawal towards children. However, parents higher in depressive symptoms may also directly engage in both hostile and withdrawn parenting behaviour and practices (see Table 1). For example, in a study of mothers diagnosed with depression, Weissman et al. (1972) found during an acute depressive episode, mothers reported engaging in both hostility, characterised by increased friction, anger and irritability, and withdrawal, characterised by a lack of affection, neglecting daily tasks, and less involvement with their children. This pattern also was supported by Cox et al. (1987), who observed that mothers diagnosed with depression directed more hostility, characterised by increased criticism and irritability, and withdrawal, characterised by disengagement and a lack of responsiveness, towards their children. A meta-analysis by Lovejoy et al. (2000) also found that parents' depressive symptoms were consistently associated with greater hostility, negative affect, and lower responsiveness. Furthermore, parents may fluctuate between hostile and withdrawn parenting practices. Stoneman et al. (1989) assessed depression and inconsistent discipline and found parents' greater reported depressive symptoms were associated with greater reported inconsistent disciplining, characterised by anxiety-induction, rational-guidance, punitive, and non-punitive strategies. A review by Gelfand and Teti (1990) provided additional support for these findings, concluding that mothers diagnosed with depression alternate between under-controlled (i.e., withdrawn) and harsh (i.e., hostile) parenting.

Thus, as indicated in Table 1, parents' depressive symptoms can create increased negative interactions characterised by hostility and decreased positive interactions characterised by withdrawal, reducing cohesion in the parent-child relationship and, subsequently, the family. The unique profile of depressive symptoms may result in some parent-child dyads characterised by increased hostility (e.g., if parents are predominantly

experiencing symptoms of irritability), and some characterised by increased withdrawal (e.g., if parents are predominantly experiencing symptoms of low mood), while others are characterised as both. However, in some cases, the same symptoms can produce different behaviours. For example, in separate studies, lethargy has been associated with both hostility (Baumrind, 1966; Downey & Coyne, 1990) and withdrawal (Breznitz & Sherman, 1987). Individual differences and the chronicity and severity of depressive symptoms (Galbally & Lewis, 2017) may also play a role in determining whether parents engage in greater hostility, withdrawal, or both. However, although different mechanisms might explain whether hostility or withdrawal or both emerge from depressive symptoms, each type of behaviour should ultimately reduce cohesion in the family system.

Current Research

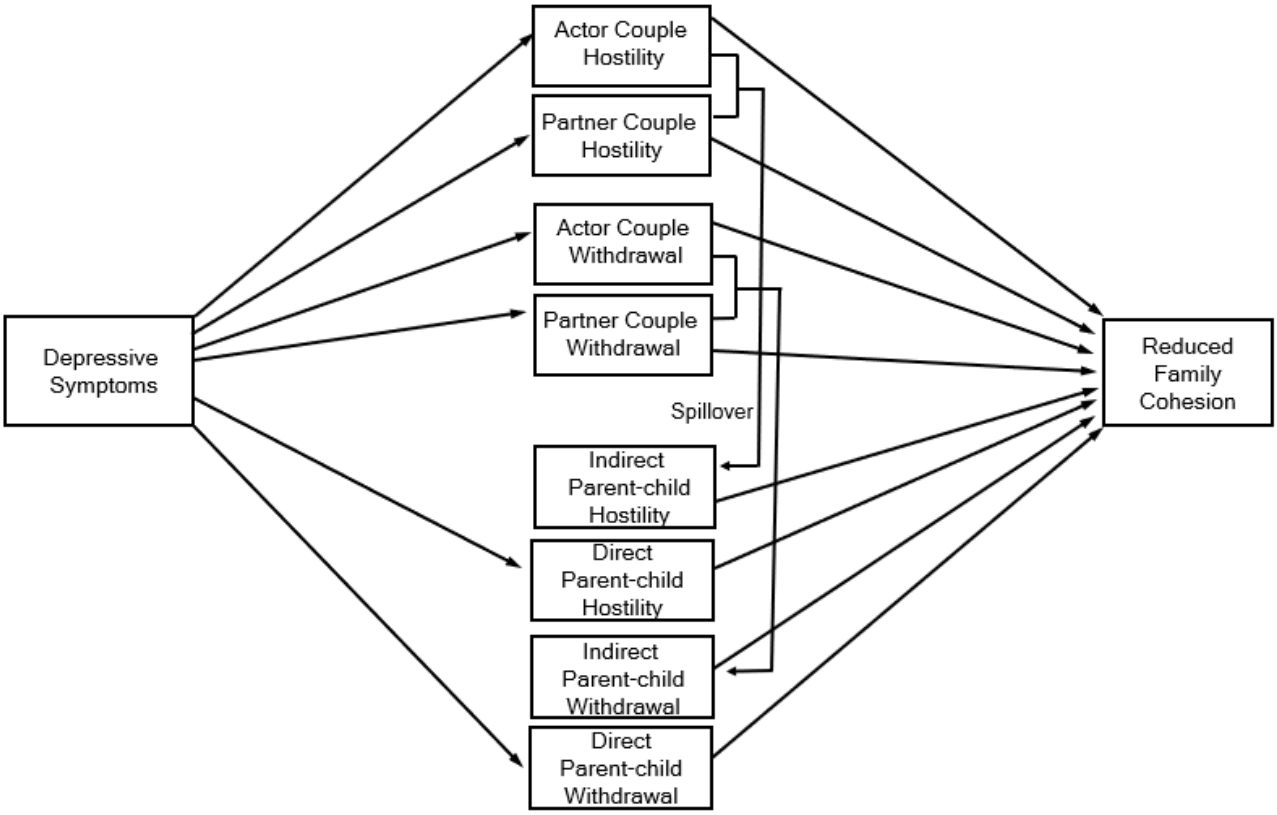
The overarching aim of my research was to take a family-wide approach to understand how parents' depressive symptoms affect the family system, including the couple subsystem, the parent-child subsystem and, in turn, the family as a whole. As reviewed above, greater depressive symptoms can negatively impact both the couple and parent-child relationships through increased hostility and withdrawal. As illustrated in Figure 1, I simultaneously examined whether disruptions to both types of relationships will reduce overall family cohesion. To test these family processes, I examined hostility, withdrawal and cohesion in a large sample of families (N = 285). Although much of the existing literature has conceptualised the relationship disruptions arising from depressive symptoms as a unidimensional construct characterised exclusively by either increased hostility or withdrawal, I propose both hostility and withdrawal should be considered simultaneously because of the unique effects they may have on family cohesion. Accordingly, I evaluate the links between depressive symptoms and hostility and withdrawal, along with the associated outcome of lower family cohesion. Within the sample, I focused on including measures of

both parents with their 4–5-year-old child. This is an important time in the family life cycle to assess links between parents' depressive symptoms and family cohesion for several reasons. Individuals are more vulnerable to experiencing depressive symptoms following major life changes, such as those associated with having children (Coyne et al., 2002). Additionally, high levels of cohesion appear to be particularly important to families during this period since most children are only just beginning to transition into formal full-time schooling, and subsequently, families are spending the majority of their time together (Coe et al., 2018; Lucia & Breslau, 2006). Therefore, during this developmental stage, parents and children are more reliant on each other for experiencing the positive effects associated with high cohesion, such as improved emotional, mental, and physical health outcomes (Cooper et al., 1983; Davies et al., 2002; Martin-Biggers et al., 2018).

In this study, parents independently completed self-report measures assessing their depressive symptoms and perceptions of family cohesion. Parents also reported on their couple and parent-child relationship to assess hostile and withdrawn behaviour. Families then attended a laboratory session with their 4–5-year-old child, where they were observed engaging in a 5-minute free play interaction. This free play activity allowed families to engage in private, non-instructional play together, from which independent coders rated family, couple, and parental behaviours. These measures provided two ways to assess the variables in Figure 1. First, I utilised the self-report measures to test whether parents' depressive symptoms were associated with reported hostility and withdrawal within the couple and parent-child relationship and, in turn, family cohesion. Second, I assessed the association of parents' depressive symptoms on observed hostility and withdrawal within the couple and parent-child relationship during the family-play activity and, in turn, observed family cohesion.

Figure 1

Conceptual Figure Illustrating Prediction that Depressive Symptoms will Negatively Affect Family Cohesion via both Actors' and Partners' Couple and Parent-child Hostility and Withdrawal



The current research is novel in three key ways. First, this study integrates multiple indices of family functioning to assess whether disruptions to both the couple and parent-child subsystems contribute to or mediate the association between parents' depressive symptoms and family cohesion. Very few studies have investigated the impact of depressive symptoms on both the couple and parent-child subsystems together. The research that has investigated both variables simultaneously has primarily focused on mediational models in which parental depression compromises the couple relationship, which subsequently impacts children's adjustment (Cummings et al., 2005; Downey & Coyne, 1990; Du Rocher Schudlich & Cummings, 2007), leaving the impact on overall family functioning unexplored. Second, to assess the broader impact on the family system, I focus on family cohesion, an important outcome that should be affected by hostility and withdrawal. Increased family

cohesion plays an important role in the healthy development of children and families (Cooper et al., 1983) and can serve as a protective factor against exposure to unpleasant but inevitable aspects of life such as everyday stressors (Kliewer & Kung, 1998) and interparental conflict (Davies et al., 2002, 2004; Lindahl & Malik, 2011). However, family cohesion has not been widely researched, with the existing literature predominantly limited to the outcomes of poor family cohesion. Low family cohesion has been found to predict reduced couple satisfaction (Henderson et al., 2003), reduced children's self-esteem (Cooper et al., 1983) and increased children's internalising and externalising behaviours (Coe et al., 2018; Henderson et al., 2003; Kliewer & Kung, 1998; Lucia & Breslau, 2006), as well as greater adolescent delinquency (Matherne & Thomas, 2001), loneliness and social anxiety (Johnson et al., 2001) and destructive conflict strategies (Johnson, 2002). Thus, enhancing understanding of one of the factors that may predict lower cohesion (depressive symptoms) can also play an important role in serving as a partial circuit breaker in reducing these undesirable outcomes. Third, much of the existing literature on cohesion has relied on self-report data, which can be negatively biased, particularly by depressed mood, which can result in inaccurate reporting (Gustavson et al., 2012). Thus, the current research circumvents this limitation in methodology by integrating both self-report and observational data to account for any reporter bias.

Investigating family cohesion, specifically in relation to parents' depressive symptoms, is critical in the New Zealand context, which encourages a whānau-centred framework; this approach acknowledges that the well-being of each individual within a family is intertwined with the well-being of the whānau (family), hence if one parent experiences depressive symptoms, the whole family is impacted (Ministry of Health, 2015). Thus, supporting parents high in depressive symptoms requires the involvement of the whānau. However, this holistic framework is often not reflected in practice, with the focus

remaining on the individual experiencing depressive symptoms. By increasing the understanding of factors influencing family cohesion, it becomes easier to promote high levels of cohesion and subsequently improve both family and individual outcomes in families in which parents are high in depressive symptoms.

Method

Participants

Participants included 285 mixed-gender couples (N = 570) with at least one child who were recruited from advertisements posted in a parenting magazine and at early childhood centres or from a database of parents who had expressed interest in contributing to studies investigating children's development. The sample was open to all family types (e.g., mixed-gender, same-gender), but all families who participated involved mixed-gender couples. Couples were married (84%) or cohabiting (16%), with an average relationship length of 11.70 years (*SD* = 4.36). Ages ranged from 23-55 years (*M* = 37.11, *SD* = 5.24). Participants identified as Māori (7.8%), Pacific Nations (7.1%), New Zealand European/Pākehā (55%), non-NZ European (12.4%), Asian (9.2%), Indian (4.2%), or an ethnicity not listed (4.2%). Couples completed an online questionnaire before attending a lab-based session with their 4–5-year-old child, which included the family free-play activity described below. Families received NZD$180 for completing the study.

Procedure

This study received ethics approval [Family Resilience and Wellbeing Study, The University of Auckland, Protocol: 020686]. Both partners independently completed online assessments prior to attending the in-person research session assessing demographics, depressive symptoms, family cohesion, and parenting measures. On arrival at the laboratory, families were told there was a box of toys on the table which they could play with together and were left in the room unattended for five minutes. This family free-play interaction was

video-recorded and used for coders to rate behaviour within the couple and parent-child relationship along with family cohesion. After the free-play activity, couples were moved to a separate room while their child completed tasks unrelated to the current study. Each couple member then independently completed questionnaires assessing their typical behavioural responses when experiencing disagreements or conflict with their partner to assess hostility and withdrawal.

Measures

Means, descriptive statistics and reliabilities of all measures are shown in Table 2. All multi-item self-report measures were averaged, with the exception of depressive symptoms. The observational measures involved two independent coders rating each behavioural dimension, and coder reliability was assessed by intra-class correlations (ICC; see Table 2).

Table 2

Descriptive Statistics of Self-report and Observational Variables

Measures	*Women*			*Men*			*R*
	Mean	*SD*	*Range*	*Mean*	*SD*	*Range*	
Questionnaire Measures							
1. Depressive Symptoms	10.19	7.42	0-47	9.88	7.05	0-39	.86
2. Couple Hostility	3.45	1.04	1-6.63	3.08	.97	1-7	.85
3. Parent-child Hostility	1.76	.52	1-5	1.72	.50	1-4	.74
4. Couple Withdrawal	2.90	1.13	1-6.83	3.11	1.07	1-6.33	.76
5. Parent-child Withdrawal	1.76	.45	1-4.22	1.98	.51	1-3.89	.81
6. Family cohesion	6.17	.88	3-7	5.91	.98	1.8-7	.94
Observational Measures							
7. Couple Hostility	1.14	.62	1-7	1.10	.41	1-5	.93
8. Parent-child Hostility	1.18	.63	1-6	1.10	.37	1-4	.86
9. Couple Withdrawal	1.36	.91	1-7	1.59	1.10	1-7	.94
10. Parent-child Withdrawal	1.70	1.20	1-7	1.94	1.29	1-7	.95
11. Family cohesion	4.49	1.54	1-7	4.49	1.54	1-7	.95

Note. All measures are scored on 1 to 7 scales, except depressive symptoms which represent scores from 0-60 and the questionnaire measure of parent-child hostility and withdrawal, which represent scores from 1-5. R = reliability. Reliability of questionnaire items was assessed with Cronbach's alphas. Reliability for observational measures was assessed using intraclass correlations (ICC).

Self-Report Measures

Depressive symptoms. Participants completed the 20-item Centre of Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), designed for use with nonclinical samples. The CES-D assesses depressive symptoms experienced during the past week (e.g., "I felt depressed", "I had crying spells", "I felt hopeful about the future" [reverse-coded]; "I felt happy" [reverse-coded] (0=*rarely or none of the time* [less than 1 day] to 3=*most or all the time* [5-7 days]). The items were summed. Although the CES-D is not a diagnostic tool, scores ≥ 16 are often considered evidence of meaningful depressive symptoms. CES-D scores ranged from 0 to 47 and 16% (n = 45) of women and 21% (n = 59) of men scored 16 or above.

Family Cohesion. Participants individually rated five items adapted from various scales assessing family cohesion (Halberstadt et al., 1995; Meldrum et al., 2016; Moos & Moos, 1981; Tolan et al., 1997). The five items included: In our family… "there is a sense of togetherness"; "we support and help one another"; "we feel very close to one another"; "we can rely on each other", and "we like to spend free time with each other" (1 = *strongly disagree*, 7 = *strongly agree*).

Couple Behaviour. Participants completed the Kerig (1996) Conflict and Problem-Solving Scales, which included two subscales that assessed couple hostility (verbal aggression) and couple withdrawal (avoidance). Participants were asked, "Please rate how often you respond in the following ways when you have conflict or disagreements", using a scale of 1 = *not often* to 7 = *very often*.

Couple Hostility. The eight items included: "I raise my voice, yell, shout"; "I name-call, curse, insult my partner"; "I insist on my own point of view"; "I try to convince my partner of my own way of thinking"; "I interrupt/don't listen to my partner"; "I become sarcastic"; "I make accusations" and "I say or do something to hurt my partner's feelings".

Couple Withdrawal. The six items included: "I change the subject"; "I clam up, hold in feelings"; "I leave the room"; "I storm out of the house"; "I sulk, refuse to talk, or give the 'silent treatment'"; and "I complain, bicker without really getting anywhere".

Parent-child behaviour. Participants completed the Parenting Styles and Dimensions Questionnaire (PDSQ-Short Version; Robinson et al., 2001), which included two subscales that assess parental hostility (punishment) and parental withdrawal (low responsiveness). Participants were asked, "Please rate how often you exhibit this behaviour with your child", using a scale of 1 = *never* to 5 = *always*.

Parent-child Hostility. The four items included: "I yell or shout when my child misbehaves"; "I slap my child when he/she misbehaves"; "I explode in anger towards my child" and "I use physical punishment as a way of disciplining my child".

Parent-child Withdrawal. The nine items assessed parental responsiveness and were reverse coded to indicate withdrawal. The items included: "I am responsive to my child's feelings or needs"; "I take my child's desires into account before asking him/her to do something"; "I encourage my child to talk about his/her troubles"; "I encourage my child to freely express him/herself even when disagreeing with parents"; "I give comfort and an understanding when my child is upset"; "I give praise when my child is good"; "I take into account my child's preferences in making plans for the family"; "I show respect for my child's opinions by encouraging him/her to express them" and "I have warm and intimate times together with my child".

Observational Measures (Free Play Activity)

Participants were video recorded for five minutes while they were left with their child unattended when first arriving at the session. The arrival room consisted of a child-sized table with a box of toys containing a toy catapult, tic-tac-toe, a magnetic fishing game, a tower stacking game, Barrel of Monkeys, Connect-4, and a colouring book and crayons. Beside the

table were two child-sized chairs. Two adult-sized chairs were placed away from the table. Two trained independent coders watched this 5-minute interaction in 1-minute segments in three waves to rate family cohesion and couple and parental behaviour (1 = *low*, 7 = *high*). First, coders observed family cohesion. Second, coders rated one parent's behaviour towards their partner (e.g., mother's behaviour towards father) and their child (e.g., mother's behaviour towards child). Third, coders rated the other parent's behaviour towards their partner and child (e.g., father's behaviour towards mother and child). In half of the families, mothers were rated first; in the other half of families, fathers were rated first. All coding schedules were pilot tested and revised before use (see Appendix A for full coding schedules). The ICCs shown in Table 2 indicated that coder reliability was excellent for all behavioural variables. Coders also indicated whether the experimenter led families to the table, if families verbally expressed an awareness of the cameras or being observed, and whether coding was completed in-person or online. These variables did not systematically alter behaviour or the results. Out of the 285 families who participated, 31 families were not included in the observational analyses because coders could not reliably rate all behaviours due to an additional child (i.e., sibling) present in the room, the families did not speak English during the interaction, or the video-recordings were incomplete.

Cohesion Coding. A schedule to code family cohesion was adapted from the System for Coding Interactions and Family Functioning (SCIFF; Lindahl & Malik, 2000). The SCIFF is a coding manual used to behaviourally assess family functioning using observational data and was originally developed to assess family functioning based on an interaction between parents and their child in a multi-ethnic sample. Observations were based on a 10-minute recording of family members discussing a recent family argument that involved all three (or two if it was a single-parent family) family members. This original study found strong inter-rater reliability using the SCIFF with both a diverse range of ethnic groups and family

composition (i.e., one- and two-parent families; Lindahl & Malik, 2000). Further studies have found a modified version of the SCIFF to be a useful tool for coding family behaviour in low-income urban samples with variation in gender and race that yields high inter-rater reliability and high convergent validity across similar measures of family functioning (Waller et al., 2019).

For the purpose of this study, the family-level code to observe cohesiveness was used as the foundation to develop a coding protocol for assessing family cohesiveness in a triadic free-play activity in which families were unobtrusively observed on arrival. The observational cohesiveness assessment from the SCIFF defines cohesiveness as "the sense of unity, togetherness, and closeness within a family" (Lindahl & Malik, 2000). We made some minor adjustments to the observational descriptions and ratings to adapt the language and focus to the free-play interaction across the larger family study and extended the 1-5 scale to 1 (*very low*) to 7 (*very high*). Family cohesion was characterised by two components: positive affect (the extent to which family members were affectionate, respectful, and warm towards each other) and mutual engagement (the extent to which family members displayed a sense of mutual connection and coordination). Unlike the self-report measure of family cohesion which resulted in separate scores for each parents' perceptions of family cohesion, the observational measure involved families being given an overall rating of family cohesion, resulting in the same score for both parents.

Couple Coding. A schedule to code couple hostility and withdrawal was developed by integrating behaviours from the Coparenting Behaviour Coding Scales (Schoppe-Sullivan, 2007), the Communication Strategies Coding Scheme (Overall et al., 2009; Overall, 2018), and observational coding of responsiveness during couples' discussions (Maisel et al., 2008). The coding schedule assessed each parent's affective behaviour toward their partner within

the context of a triadic family interaction. Each partner's behaviour was individually rated using a scale of 1 = *none* to 7 = *very high*.

Couple Hostility. Couple hostility was assessed based on the degree to which each person verbally or non-verbally expressed hostility toward their partner characterised by poor regard (criticising, blaming, insults putting down) and expressions of negative affect (anger, frustration, irritations). Indicators of hostility also included any expression or actions that invalidated their partner, including being patronising, condescending, or rejecting; and denying the validity of their partner's thoughts, actions, and contributions to the interaction either directly to the partner or indirectly in their actions and statements to the child. Additional indicators of hostility also included being domineering and insisting or demanding their partner think or respond in particular ways, such as commanding partners to do tasks/actions during the family activity.

Couple Withdrawal. Couple withdrawal was assessed based on the degree to which each person exhibited neglect and disengagement from their partner, characterised by a passive and dismissing stance toward their partner (being distant, aloof and closed-off towards their partner), avoiding engaging with their partner (hesitating or diverting attention, displaying muted or no communication towards their partner) and showing a lack of attention or interest (being non-responsive to their partner's attempts to engage them in interaction). Higher levels of neglect involved actively dismissing their partner's responses; disengaging from their partner, as evident by reducing eye contact, closed-off body posture, creating physical distance, and withdrawing from their partner.

Parent-child Coding. A schedule to code parental hostility and withdrawal was developed by adapting the emotional availability scales (Biringen et al., 2000), the coding schedule from Landry et al. (2008), and the Parental Responsiveness Coding Scheme (Low, et al., 2017). The coding schedule assessed each parent's affective behaviour toward their

child within the context of a triadic family interaction. Each parent's behaviour was individually rated using a scale of 1 = *none* to 7 = *very high*.

Parent-child Hostility. Parent's hostility was assessed based on the degree to which the parent verbally or non-verbally expressed hostility characterised by verbal indicators (raised or sharp voice, snapping at the child, or a voice tone that expresses dissatisfaction with or negative evaluations of their child) and expressions of negative affect (irritation, frustration, anger, disgust, boredom, or impatience) toward their child. Indicators of hostility also included parents invalidating, rejecting, or expressing negative evaluations of their child by being critical, patronising or sarcastic, or expressing that their child's actions, thoughts or feelings were wrong in some way. Additional indicators of hostility included parents insisting or demanding their child respond in particular ways, such as commanding their child to do tasks/actions during the free play or pushing their child to do something they did not want to do.

Parent-child Withdrawal. Parent's withdrawal was assessed based on the degree to which each parent exhibited neglect and disengagement from their child, characterised by a passive and dismissing stance toward their child (being distant, aloof and closed-off towards the child), avoiding engaging with their child (hesitating or diverting attention; displaying muted or no communication towards their child) and showing a lack of attention or interest (being non-responsive to their child's attempts to engage them in interaction). Higher levels of neglect involved actively dismissing their child's responses, disengaging from their child, as evidenced by reducing eye contact, closed-off body posture, creating physical distance, and withdrawing from their child.

Results

The results are presented in two sections focusing on the different measurement strategies: self-report assessments versus observational assessments. The first section tests the

links between depressive symptoms, hostility and withdrawal within couple and parent-child relationships, and family cohesion assessed via questionnaire measures. The second section tests the effects of depressive symptoms on observed hostility and withdrawal within couple and parent-child relationships, and family cohesion during the family free-play interaction.

Questionnaire Assessments: The Effect of Depressive Symptoms on Self-Reported Couple and Parent-Child Hostility and Withdrawal, and Family Cohesion

The top half of Table 3 displays the correlations among the questionnaire measures of depressive symptoms, couple and parent-child hostility and withdrawal, and family cohesion. The patterns were the same for women and men. As predicted, depressive symptoms were significantly positively correlated with greater couple and parent-child hostility, and greater couple and parent-child withdrawal for both. Supporting that hostility and withdrawal spills over across subsystems, couple hostility and withdrawal were positively correlated with parent-child hostility and withdrawal respectively. Finally, consistent with the predicted associations depicted in Figure 1, depressive symptoms and all hostility and withdrawal variables were negatively correlated with lower family cohesion. However, to evaluate both actor and partner effects, and the mediating role of couple and parent-child hostility and withdrawal, as depicted in Figure 1, I applied the actor-partner interdependence mediation model (APIMeM; Ledermann et al., 2011), within the structural equation modelling framework using MPlus (Version 8.3; Muthén et al., 2016; Muthén & Muthén, 1998). Given the number of actor and partner paths to be calculated across depressive symptoms, actor and partner behaviour within couple and parent-child relationships, and actor and partner family cohesion, I conducted two models to test the associations presented in Figure 1 focusing on couple and parent-child hostility (Model 1) and couple and parent-child withdrawal (Model 2). I then ran a full model to assess whether the effects for hostility and withdrawal were independent.

Model 1: Self-Reported Hostility in Couple and Parent-Child Relationships

As shown in Figure 2, the first model specified, for both women (mothers) and men (fathers), all the links between depressive symptoms, actors' own and their partners' couple and parent-child hostility, and actors' own and their partners' family cohesion. Starting from the left of Figure 2, women's and men's depressive symptoms were specified to predict both their own and their partners' couple and parent-child hostility. Paths 1-2 assess the couple relationship. Paths A1 for both women and men test actors' depressive symptoms on actors' couple hostility (e.g., women's depressive symptoms on women's couple hostility), and Paths P1 for both women and men test actors' depressive symptoms on partners' couple hostility (e.g., women's depressive symptoms on men's couple hostility). Paths A2 for both women and men test whether actors' couple hostility predicts actors' family cohesion (e.g., women's couple hostility on women's cohesion), and Paths P2 test whether actors' couple hostility predicts partners' family cohesion (e.g., women's couple hostility on men's cohesion). Paths 3-4 test the same processes for the parent-child relationship. Paths A3 tests actors' depressive symptoms on actors' parent-child hostility, and Paths P3 tests actors' depressive symptoms on partners' parent-child hostility. Paths A4 test actors' parent-child hostility on actors' family cohesion, and Paths P4 test actors' parent-child hostility on partners' family cohesion. I also assessed couple to parent-child spill-over of hostility by testing the effect of actors' couple hostility on actors' parent-child hostility (S1) and actors' couple hostility on partners' parent-child hostility (S2). Lastly, I directly assessed depressive symptoms on family cohesion, with Paths A5 testing actors' depressive symptoms on actors' family cohesion, and Paths P5 testing actors' depressive symptoms on partners' family cohesion.

Table 3

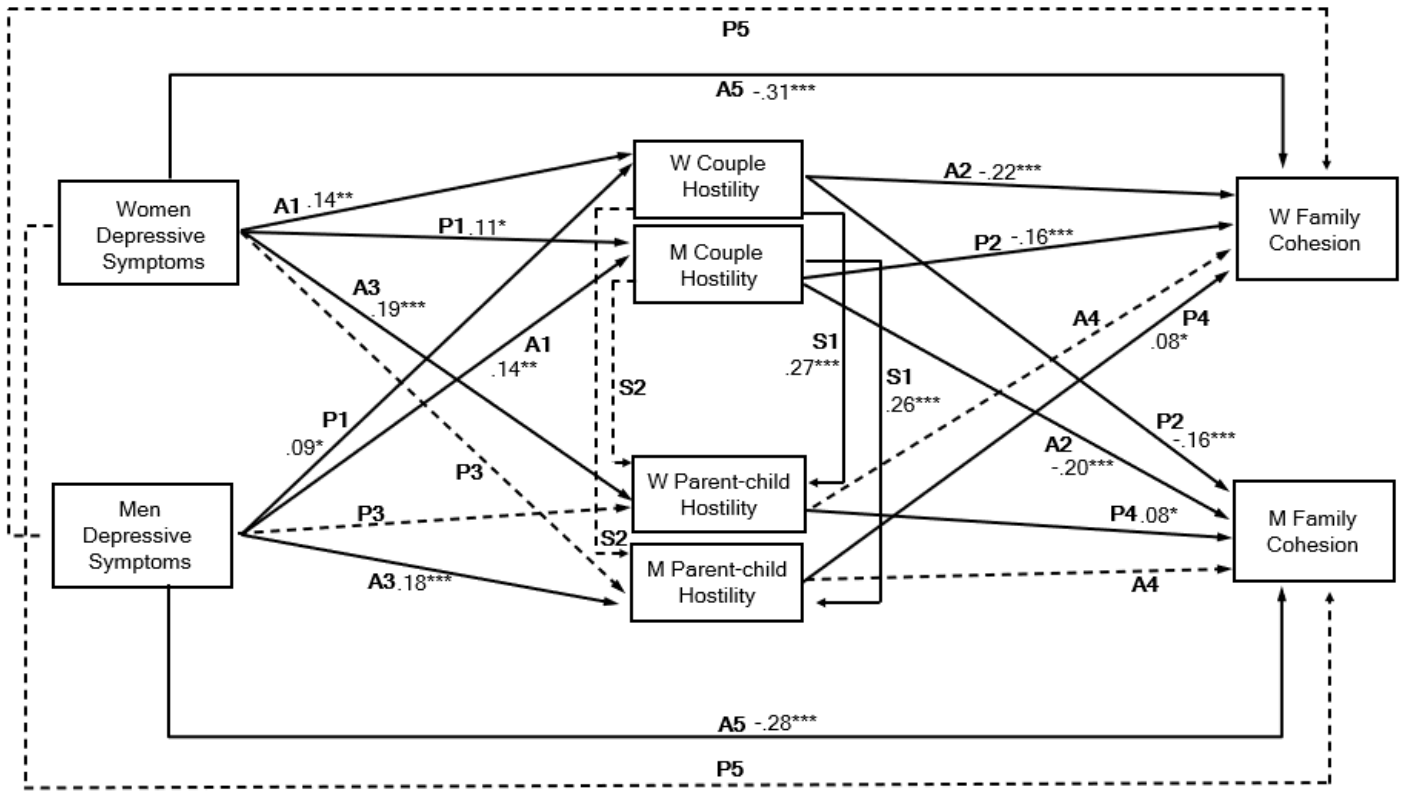
Correlations of Self-report and Observational Variables

Measures	*1.*	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*11.*
Questionnaire Measures											
1. Depressive Symptoms	**.185****	.131*	.229**	.220**	.123*	-.342**	-.002	.083	-.011	.098	-.33
2. Couple Hostility	.181**	**.312****	.361**	.290**	.168**	-.278**	.111	.034	.121	.109	-.146*
3. Parent-child Hostility	.241**	.249**	**.468****	.304**	.418**	-.121*	-.021	.044	.118	.077	-.145*
4. Couple Withdrawal	.346**	.441**	.163**	**.064**	.274**	-.272**	-.066	-.044	.096	.051	-.025
5. Parent-child Withdrawal	.138*	.211**	.289**	.304**	**.296****	-.276**	-.085	-.038	-.081	-.003	-.016
6. Family cohesion	-.380**	-.345**	-.194**	-.391**	-.342**	**.396****	.002	-.116	.004	.015	.124*
Observational Measures											
7. Couple Hostility	.003	.205**	.040	.006	.024	-.125*	**.296****	.313**	.396**	.208**	-.189**
8. Parent-child Hostility	.112	.160**	.097	.066	.107	-.160**	.046	**.417****	.104	.135*	-.129*
9. Couple Withdrawal	-.030	.192**	.049	-.058	-.009	-.126*	.340**	-.013	**.385****	.539**	-.469**
10. Parent-child Withdrawal	-.081	.068	-.024	-.022	-.028	-.048	.243**	.013	.693**	**.258****	-.524**
11. Family cohesion	.033	-.130*	-.026	.022	-.059	.120	-.242**	-.081	-.584**	-.673**	-

Note. *$p < .05$. **$p < .01$. Women's correlations are presented in the top right of the table. Men's correlations are presented in in the bottom left of the table. Correlations between women's and men's variables are presented in bold on the diagonal. Observational family cohesion was a family-based score and thus the same rating for both men and women.

Figure 2

Results of Actor Partner Interdependence Mediation Model (APIMeM) Testing Self-reported Couple and Parent-child Hostility as Mediators of the Effects of Depressive Symptoms on Family Cohesion



Note. W = women. M = men. A refers to actor effects. P refers to partner effects. Significant paths are shown in solid lines with the standardized coefficients provided. Non-significant partner effects between depressive symptoms, parent-child hostility and family cohesion, spill-over effects, and direct partner effects between depressive symptoms and family cohesion are shown by the dashed lines. Table 4 provides the full results for all paths. *$p <$ .05. **$p <$ .01, ***$p <$ .001.

All paths were included to assess each actor and partner effect while controlling for all other direct and indirect pathways, regardless of whether they were significant or not. We constrained all paths across women and men and tested for gender differences by evaluating the differences in model fit when these paths were left unconstrained.

The constrained model demonstrated excellent fit ($\chi2(12) = 12.623$, $p = .397$, RMSEA = 0.013, CFI = .998, TLI = .996, SRMR = .052), and did not significantly differ ($\Delta\chi^2 =$ 12.623, $p > .01$) from a model in which paths across mothers and fathers were not constrained

($\chi 2(0) = 0.000$, $p = .000$, RMSEA = 0.000, CFI = 1.000, TLI = 1.000, SRMR = 0.000). Finally, to determine whether couple hostility and parent-child hostility mediated any actor and partner effects of depressive symptoms on cohesion, we calculated all indirect effects using bootstrapping with 5,000 samples to generate the confidence intervals (Preacher & Hayes, 2008).

Table 4 contains the estimates and significance tests for all paths and Table 5 presents the indirect effects. Figure 2 presents the standardized coefficients for significant paths shown as solid lines and depicts the non-significant paths shown as dashed lines. I first consider the paths involving couple hostility (Paths 1-2, Figure 2), including the relevant indirect effects. I then consider the paths involving parent-child hostility (Paths 3-4, Figure 2), including spill-over from couple to parent-child (Paths S1-S2) and associated indirect effects. Lastly, I consider the direct effects of depressive symptoms on family cohesion (Paths 5).

Table 4

Standardized Coefficients for all Paths Specified in APIMeM in Figure 2 Testing the Links between Self-reported Depressive Symptoms, Hostility and Family Cohesion

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → Couple hostility										
Depressive symptoms → actors' couple hostility (A1)	.136**	.057	.203	3.386	.001	.138**	.058	.218	3.373	.001
Depressive symptoms → partners' couple hostility (P1)	.105*	.022	.189	2.467	.014	.094*	.018	.157	2.441	.015
Couple hostility → Family cohesion										
Couple hostility → actors' family cohesion (A2)	-.220***	-.300	-.140	-5.399	<.001	-.195***	-.267	-.122	-5.280	<.001
Couple hostility → partners' family cohesion (P2)	-.158***	-.234	-.081	-4.049	<.001	-.157***	-.232	-.081	-4.055	<.001
Depressive symptoms → Parent-child hostility										
Depressive symptoms → actors' parent-child hostility (A3)	.187***	.110	.252	4.779	<.001	.181***	.106	.257	4.727	<.001
Depressive symptoms → partners' parent-child hostility (P3)	.015	-.064	.094	.363	.717	.014	-.060	.075	.364	.716
Parent-child hostility → Family cohesion										
Parent-child hostility → actors' family cohesion (A4)	-.032	-.116	.053	-.733	.463	-.029	-.107	.049	-.732	.464
Parent-child hostility → partners' family cohesion (P4)	.081*	.001	.161	1.978	.048	.084*	.001	.166	1.986	.047
Spill-over of Couple hostility → Parent-child hostility										
Couple hostility → actors' parent-child hostility (S1)	.267***	.189	.333	6.678	<.001	.256***	.183	.329	6.845	<.001
Couple hostility → partners' parent-child hostility (S2)	.045	-.034	.123	1.115	.265	.041	-.031	.102	1.115	.265

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → family cohesion										
Depressive symptoms → actors' family cohesion (A5)	-.309***	-.386	-.232	-7.894	<.001	-.277***	-.348	-.206	-7.669	<.001
Depressive symptoms → partners' family cohesion (P5)	-.069	-.143	.005	-1.824	.068	-.069	-.143	.005	-1.833	.067

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

Table 5

Indirect Effects Assessing the Mediation Pathways Between Self-Reported Depressive Symptoms, Couple and Parent-child Hostility, and Family Cohesion

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Mediating Role of Couple Hostility										
Depressive symptoms → actors' couple hostility → actors' family cohesion	-.030**	-.050	-.010	-2.891	.004	-.027**	-.045	-.008	-2.867	.004
Depressive symptoms → partners' couple hostility → actors' family cohesion	-.017*	-.032	-.001	-2.110	.035	-.015*	-.029	-.001	-2.107	.035
Depressive symptoms → actors' couple hostility → partners' family cohesion	-.021**	-.038	-.005	-2.607	.009	-.022**	-.038	-.005	-2.613	.009
Depressive symptoms → partners' couple hostility → partners' family cohesion	-.021*	-.039	-.003	-2.233	.026	-.021*	-.039	-.003	-2.244	.025
Mediating Role of Parent-child Hostility										
Depressive symptoms → actors' parent-child hostility → actors' family cohesion	-.006	-.022	.010	-.725	.469	-.005	-.020	.009	-.723	.470
Depressive symptoms → partners' parent-child hostility → actors' family cohesion	.001	-.006	.008	.357	.721	.001	-.005	.007	.357	.721
Depressive symptoms → actors' parent-child hostility → partners' family cohesion	.015	-.001	.031	1.825	.068	.015	-.001	.031	1.831	.067
Depressive symptoms → partners' parent-child hostility → partners' family cohesion	.000	-.003	.002	-.325	.745	.000	-.003	.002	-.325	.745
Mediating Role of Spill-over of Couple Hostility										
Depressive symptoms → actors' couple hostility → actors' parent-child hostility → actors' family cohesion	-.001	-.004	.002	-.713	.476	-.001	-.004	.002	-.711	.477

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → actors' couple hostility → actors' parent-child hostility → partners' family cohesion	.003	-.001	.006	1.658	.097	.003	-.001	.006	1.663	.096
Depressive symptoms → actors' couple hostility → partners' parent-child hostility → actors' family cohesion	.001	-.001	.002	.931	.352	.000	-.001	.001	.931	.352
Depressive symptoms → actors' couple hostility → partners' parent-child hostility → partners' family cohesion	.000	-.001	.000	-.601	.548	.000	-.001	.000	-.602	.547
Depressive symptoms → partners' couple hostility → actors' parent-child hostility → actors' family cohesion	.000	-.001	.000	-.594	.553	.000	-.001	.000	-.593	.553
Depressive symptoms → partners' couple hostility → actors' parent-child hostility → partners' family cohesion	.000	.000	.001	.900	.368	.000	.000	.001	.901	.368
Depressive symptoms → partners' couple hostility → partners' parent-child hostility → actors' family cohesion	.002	-.001	.005	1.508	1.32	.002	-.001	.005	1.504	.133
Depressive symptoms → partners' couple hostility → partners' parent-child hostility → partners' family cohesion	-.001	-.003	.001	-.698	.485	-.001	-.003	.001	-.699	.485

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

Paths 1-2: Depressive Symptoms, Couple Hostility, and Family Cohesion. The effects of depressive symptoms on both actors' own and their partners' couple hostility were significant: greater depressive symptoms predicted higher couple hostility for both actors (Paths A1) and partners (Paths P1). Greater hostility, in turn, predicted actors' and partners' lower family cohesion (Paths A2 and P2; see Table 4 and Figure 2). As shown in the top of Table 5 (see *Mediating Role of Couple Hostility* section), significant indirect effects also supported that greater depressive symptoms were indirectly associated with lower actor-reported family cohesion via both greater actors' couple hostility (see row 1) and partners' couple hostility (see row 2). Greater depressive symptoms also predicted lower partner-reported family cohesion via greater actors' couple hostility (see row 3) and partners' couple hostility (see row 4). Thus, for both women and men, depressive symptoms predicted greater couple hostility by actors and partners, which in turn was associated with both actors and partners experiencing lower family cohesion.

Paths 3-4: Depressive Symptoms, Parent-child Hostility, and Family Cohesion. Only the actor effects (Paths A3), and not the partner effects (Paths P3), of depressive symptoms on parent-child hostility were significant. Greater depressive symptoms predicted greater actors' parent-child hostility. However, unexpectedly greater parent-child hostility was associated with *higher* family cohesion as reported by partners (Paths P4), but not reported by actors (Paths A4). This may be due to partners interpreting actors' hostility as their investment into parenting, consequently perceiving the family as more cohesive, or partners may increase warmth with children to compensate for actors' hostility, subsequently increasing their experienced family cohesion. Nonetheless, the indirect effects between depressive symptoms and actors' and partners' family cohesion were not significant for either actors' or partners' parent-child hostility, (see rows 5-8, Table 5) suggesting parent-child hostility did not mediate the relationship between depressive symptoms and family cohesion.

Paths S1-S2: Depressive Symptoms and Couple Hostility Spilling Over to Parent-Child Hostility and Family Cohesion. Finally, actors' spill-over (Paths S1), and not partners' spill-over (Paths S2) was significant, indicating that actors' greater hostility within the couple relationship spilled over to predict their own greater hostility within the parent-child relationship for both women and men. However, none of the indirect pathways testing the effect of depressive symptoms on actors' and partners' family cohesion, via the spill-over of actors' and partners' couple hostility and subsequently parent-child hostility, were significant (see rows 9-16, Table 5).

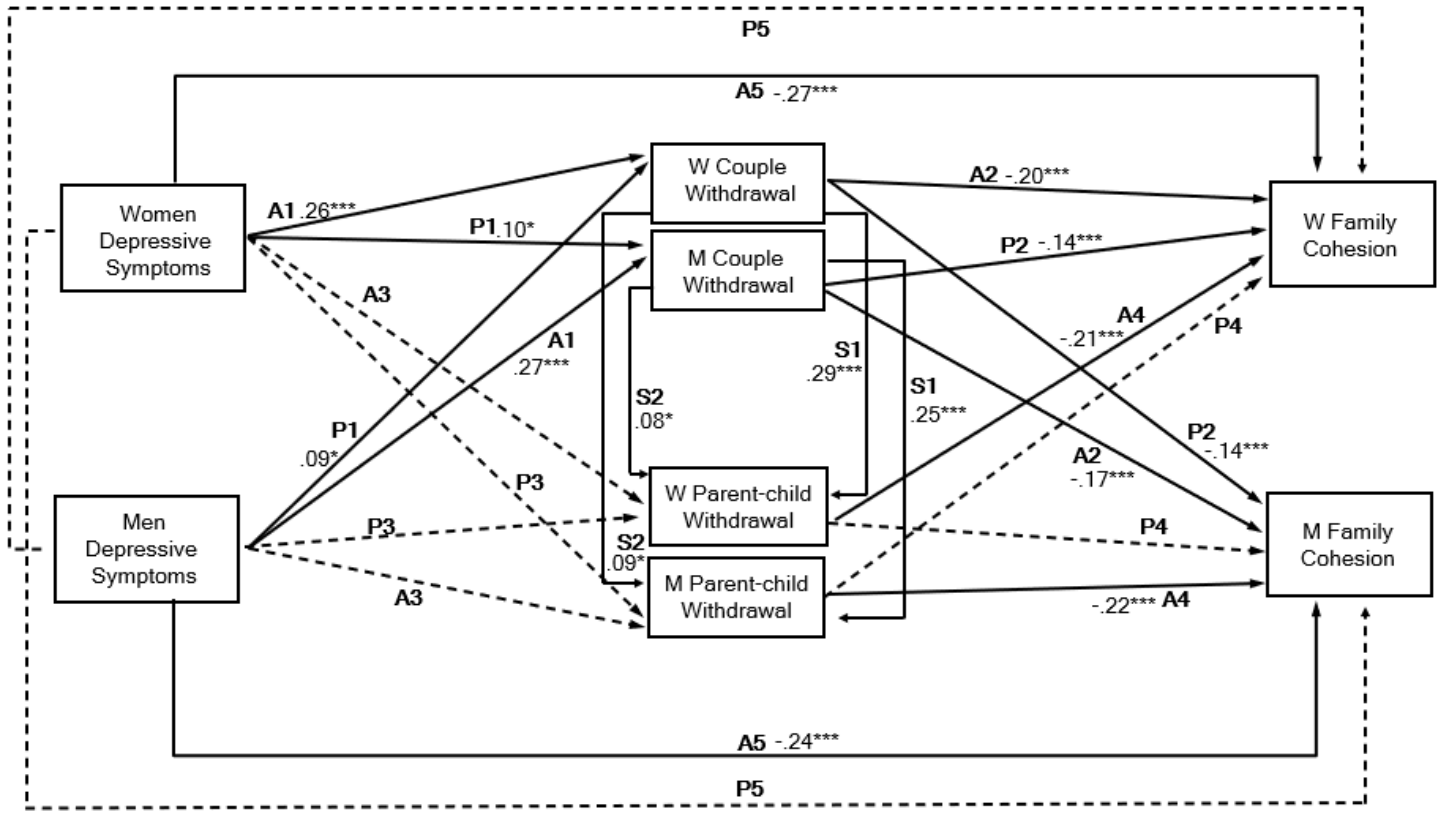
Remaining Direct Effects (Paths 5). The results of the indirect effects indicated that actor and partner couple hostility, but not parent-child hostility, mediated the links between greater depressive symptoms and actors' and partners' lower family cohesion. Nonetheless, despite the significant indirect effects indicating that actor and partner couple hostility accounted for some of the links between depressive symptoms and family cohesion, the link between actors' depressive symptoms and their own reports of family cohesion (Paths A5), but not partners' reports of family cohesion (Paths P5), remained significant. Thus, greater depressive symptoms directly predicted actors' sense of lower family cohesion independent of actors and partners' couple (and partner-child) hostility suggesting additional reasons why depressive symptoms will undermine family cohesion.

Model 2: Self-Reported Withdrawal in Couple and Parent-Child Relationships

As shown in Figure 3, I ran a concomitant model to test the links between depressive symptoms, actors' own and their partners' couple and parent-child withdrawal, and actors' and partners' family cohesion. All paths were included to assess each actor and partner effect while controlling for all other direct and indirect pathways, regardless of whether they were significant or not.

Figure 3

Results of Actor Partner Interdependence Mediation Model (APIMeM) Testing Self-reported Couple and Parent-child Withdrawal as Mediators of the Effects of Depressive Symptoms on Family Cohesion



Note. W = women. M = men. A refers to actor effects. P refers to partner effects. Significant paths are shown in solid lines with the standardized coefficients provided. Non-significant actor and partner effects between depressive symptoms, parent-child withdrawal, family cohesion, and direct partner effects between depressive symptoms and family cohesion are shown by the dashed lines. Table 6 provides the full results for all paths. *$p < .05$. **$p < .01$, ***$p < .001$.

The model presented includes all paths constrained across mothers and fathers, which demonstrated excellent fit ($\chi2(12) = 14.566$, p = .266, RMSEA = 0.027, CFI = .992, TLI = .981, SRMR = .062), and did not significantly differ ($\Delta\chi^2 = 12.623$, $p > .01$) from a model in which paths across mothers and fathers were not constrained ($\chi2(0) = 0.000$, $p = .000$, RMSEA = 0.000, CFI = 1.000, TLI = 1.000, SRMR = 0.000). As before, indirect effects were calculated using bootstrapping with 5,000 samples to generate the confidence intervals (Preacher & Hayes, 2008).

Table 6 contains the estimates and significance tests for all paths and Table 7 presents the indirect effects. Figure 3 presents the standardized coefficients for significant paths shown as solid lines and depicts the non-significant paths shown as dashed lines. I first consider the paths involving couple withdrawal (Paths 1-2, Figure 3), including the relevant indirect effects. I then consider the paths involving parent-child withdrawal (Paths 3-4, Figure 3), including spill-over from couple to parent-child (Paths S1-S2) and associated indirect effects. Lastly, I consider the direct effects of depressive symptoms on family cohesion (Paths 5).

Table 6

Standardized Coefficients for all Paths Specified in APIMeM in Figure 2 Testing the Links between Self-reported Depressive Symptoms, Withdrawal and Family Cohesion

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → Couple withdrawal										
Depressive symptoms → actors' couple withdrawal (A1)	.263***	.186	.328	6.666	<.001	.273***	.191	.355	6.525	<.001
Depressive symptoms → partners' couple withdrawal (P1)	.102*	.017	.187	2.344	.019	.089*	.015	.150	2.352	.019
Couple withdrawal → Family cohesion										
Couple withdrawal → actors' family cohesion (A2)	-.200***	-.282	-.119	-4.821	<.001	-.173***	-.244	-.101	-4.722	<.001
Couple withdrawal → partners' family cohesion (P2)	-.140***	-.218	-.062	-3.513	<.001	-.136***	-.212	-.059	-3.488	<.001
Depressive symptoms → Parent-child withdrawal										
Depressive symptoms → actors' parent-child withdrawal (A3)	.044	-.042	.117	.998	.318	.039	-.037	.115	.998	.318
Depressive symptoms → partners' parent-child withdrawal (P3)	.011	-.070	.091	.262	.794	.011	-.072	.080	.262	.793
Parent-child withdrawal → Family cohesion										
Parent-child withdrawal → actors' family cohesion (A4)	-.213***	-.287	-.140	-5.675	<.001	-.217***	-.292	-.142	-5.675	<.001
Parent-child withdrawal → partners' family cohesion (P4)	.029	-.040	.098	.812	.417	.033	-.046	.112	.815	.415

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Spill-over of Couple withdrawal → Parent-child withdrawal										
Couple withdrawal → actors' parent-child withdrawal (S1)	.290***	.204	.362	6.613	<.001	.245***	.170	.321	6.358	<.001
Couple withdrawal → partners' parent-child withdrawal (S2)	.085*	.002	.168	2.004	.045	.084*	.002	.152	2.019	.044
Depressive symptoms → family cohesion										
Depressive symptoms → actors' family cohesion (A5)	-.268***	-.345	-.191	-6.865	<.001	-.240***	-.310	-.169	-6.660	<.001
Depressive symptoms → partners' family cohesion (P5)	-.033	-.107	.040	-.885	.376	-.033	-.107	.040	-.887	.375

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

Table 7

Indirect Effects Assessing the Mediation Pathways Between Self-Reported Depressive Symptoms, Couple and Parent-child Withdrawal, and Family Cohesion

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Mediating Role of Couple Withdrawal										
Depressive symptoms → actors' couple withdrawal → actors' family cohesion	-.053***	-.079	-.026	-3.928	<.001	-.047***	-.071	-.023	-3.863	<.001
Depressive symptoms → partners' couple withdrawal → actors' family cohesion	-.014	-.028	.000	-1.958	.050	-.012	-.025	.000	-1.961	.050
Depressive symptoms → actors' couple withdrawal → partners' family cohesion	-.037**	-.060	-.014	-3.111	.002	-.037**	-.061	-.014	-3.096	.002
Depressive symptoms → partners' couple withdrawal → partners' family cohesion	-.018*	-.034	-.001	-2.111	.035	-.018*	-.034	-.001	-2.122	.034
Mediating Role of Parent-child Withdrawal										
Depressive symptoms → actors' parent-child withdrawal → actors' family cohesion	-.009	-.028	.009	-.985	.325	-.008	-.025	.008	-.984	.325
Depressive symptoms → partners' parent-child withdrawal → actors' family cohesion	.000	-.002	.003	.249	.803	.000	-.002	.003	.249	.803
Depressive symptoms → actors' parent-child withdrawal → partners' family cohesion	.001	-.003	.005	.630	.528	.001	-.003	.005	.632	.527
Depressive symptoms → partners' parent-child withdrawal → partners' family cohesion	-.002	-.020	.015	-.261	.794	-.002	-.020	.015	-.262	.794
Mediating Role of Spill-over of Couple Withdrawal										
Depressive symptoms → actors' couple withdrawal → actors' parent-child withdrawal → actors' family cohesion	-.016***	-.025	-.007	-3.621	<.001	-.015***	-.022	-.007	-3.606	<.001

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → actors' couple withdrawal → actors' parent-child withdrawal → partners' family cohesion	.002	-.003	.008	.800	.424	.002	-.003	.008	.803	.422
Depressive symptoms → actors' couple withdrawal → partners' parent-child withdrawal → actors' family cohesion	.001	-.001	.003	.750	.453	.001	-.001	.002	.747	.455
Depressive symptoms → actors' couple withdrawal → partners' parent-child withdrawal → partners' family cohesion	-.005	-.010	.000	-1.822	.068	-.005	-.010	.000	-1.824	.068
Depressive symptoms → partners' couple withdrawal → actors' parent-child withdrawal → actors' family cohesion	-.002	-.004	.001	-1.479	.139	-.002	-.004	.001	-1.478	.139
Depressive symptoms → partners' couple withdrawal → actors' parent-child withdrawal → partners' family cohesion	.000	.000	.001	.717	.474	.000	.000	.001	.719	.472
Depressive symptoms → partners' couple withdrawal → partners' parent-child withdrawal → actors' family cohesion	.001	-.001	.003	.765	.444	.001	-.001	.003	.762	.446
Depressive symptoms → partners' couple withdrawal → partners' parent-child withdrawal → partners' family cohesion	-.005*	-.011	.000	-2.066	.039	-.005*	-.011	.000	-2.069	.039

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

Paths 1-2: Depressive Symptoms, Couple Withdrawal, and Family Cohesion. The effects of depressive symptoms on both actors' own and their partners' couple withdrawal were significant: greater depressive symptoms predicted higher couple withdrawal for both actors (Paths A1) and partners (Paths P1). Greater actor withdrawal in turn, predicted lower actors' and partners' family cohesion (Paths A2 and P2; see Table 6 and Figure 3). As shown in the top of Table 7 (see *Mediating Role of Couple Withdrawal* section), significant indirect effects also supported that greater depressive symptoms were indirectly associated with lower actor-reported family cohesion via actors' couple withdrawal (see row 1), but not partners' couple withdrawal (see row 2). By contrast, greater depressive symptoms predicted lower *partner-reported* family cohesion via both greater actors' couple withdrawal (see row 3) and partners' couple withdrawal (see row 4). Thus, for both women and men, depressive symptoms predicted greater withdrawal in the couple relationship by both actors and partners, and actors' withdrawal in turn negatively predicted family cohesion experienced by both actors and partners.

Paths 3-4: Depressive Symptoms, Parent-child Withdrawal, and Family Cohesion. Neither the actor effects (Paths A3) nor the partner effects (Paths P3) of depressive symptoms on parent-child withdrawal were significant. Although greater actors' parent-child withdrawal (Paths A4), but not the partners' (Paths P4), were associated with lower actor-reported family cohesion, none of the indirect effects were significant (see rows 5-8, Table 4).

Paths S1-S2: Depressive Symptoms and Couple Withdrawal Spilling Over to Parent-Child Hostility and Family Cohesion. Finally, actors' spill-over (Paths S1), and not partners' spill-over (Paths S2) were significant, indicating that actors' greater withdrawal within the couple relationship spilled over to predict their own greater withdrawal within the parent-child relationship for both women and men. Additionally, as shown in the bottom

section of Table 7 (see *Mediating Role of Spill-over of Couple Withdrawal),* the indirect effects supported that greater depressive symptoms were indirectly associated with actors' lower family cohesion via actors' couple and subsequently parent-child withdrawal (see row 9). Greater depressive symptoms also predicted partners' lower family cohesion via greater partners' couple and subsequently parent-child withdrawal (see row 16). Additional indirect spill-over effects testing the effect of actors' depressive symptoms on actors' and partners' family cohesion via actors' and partners' withdrawal were not significant (see rows 10-15).

Remaining Direct Effects (Paths 5). Despite the significant indirect effects indicating that actor and partner couple withdrawal accounted for some of the links between depressive symptoms and family cohesion, the link between depressive symptoms and actor-reported (Path A5), but not partner' reported (Paths P5), family cohesion remained significant. Thus, greater depressive symptoms directly predicted lower family cohesion independent of actors and partners' couple (and partner-child) withdrawal suggesting additional reasons why depressive symptoms will undermine family cohesion.

Model 3. Full Model Including Hostility and Withdrawal

Finally, I ran a third model including all of actor and partner paths assessing hostility and withdrawal in Models 1 and 2 jointly to assess whether the direct and indirect effects for hostility and withdrawal were independent (and not simply due to shared associated between hostility and withdrawal; see Table 3). In Appendix B, I reproduce the results in Table 4-7 to directly compare the main results controlling for the other type of behaviour (hostility controlling withdrawal and withdrawal controlling hostility; see Tables B1-B4). Below, I focus on evaluating whether the findings from the initial models held when controlling for the direct and indirect paths of the other type of behaviour (hostility or withdrawal).

Self-Reported Hostility when Controlling for Withdrawal in Couple and Parent-Child Relationships. When controlling for withdrawal (see Table B1), all significant

hostility paths shown in Table 4 remained. The indirect effects linking depressive symptoms to actors' and partners' couple hostility on actors' and partners' family cohesion shown in Table 5 also generally remained significant (see Table B2). One change in the couple-level results occurred: The indirect effect linking depressive symptoms to partners' couple hostility on actors' family cohesion dropped in levels of significance (p = .058) when controlling for withdrawal. Additionally, the parent-child level results remained relatively unchanged, with one exception: The indirect effect linking depressive symptoms to actors' parent-child hostility on partners' family cohesion that was not initially significant (p =.068, and p = .067, for women and men respectively) became significant (p =.033, and p = .032, for women and men respectively) when controlling for withdrawal. Nonetheless, as in the original model, the direct and indirect effects relating to couples' hostility was stronger and more robust than the effects of parent-child hostility.

Self-Reported Withdrawal when Controlling for Hostility in Couple and Parent-Child Relationships. When controlling for hostility, all actor and partner paths that were significant in the original analyses (Model 2, see Table 6) remained significant (see Table B3), and all significant indirect pathways (see Table 7) also remained (see Table B4).

Summary of Self-Report Results

In sum, the analyses for the self-report measures suggested that hostility and withdrawal within the couple relationship played a stronger explanatory role in the links between depressive symptoms and family cohesion than the behaviours within parent-child relationships. Depressive symptoms predicted higher couple hostility and withdrawal for both actors and partners, which in turn predicted both actor and partner reports of lower family cohesion. These pathways were supported by significant indirect effects linking depressive symptoms to lower family cohesion via both actors' and partners' hostility and withdrawal. Although depressive symptoms were significantly associated with actors' and partners'

hostility and withdrawal within parent-child relationships, non-significant indirect effects indicated that parent-child behaviour did not play an influential role in explaining the links between depressive symptoms and family cohesion. However, significant spill-over pathways from hostility and withdrawal in the couple relationship to hostility and withdrawal in parent-child relationships also accounted for some of the links between depressive symptoms and family cohesion. Taken together, therefore, the results indicate that disruptions to couple relationships play a principal role in the way depressive symptoms can undermine family cohesion: depressive symptoms promoting couple hostility and withdrawal by both actors and partners, which directly affects family cohesion as well as indirectly affects family cohesion by spilling over to disrupt parent-child relationships. Lastly, however, actors' depressive symptoms continued to predict family cohesion even after accounting for couple hostility and withdrawal, indicating that additional processes also contribute to the links between depressive symptoms and a sense of family cohesion.

Free play interaction: The Effect of Depressive Symptoms on Observed Couple and Parent-Child Hostility and Withdrawal, and Family Cohesion

The bottom half of Table 3 displays the correlations among depressive symptoms and the observational measures of couple hostility and withdrawal, parent-child hostility and withdrawal, and family cohesion. The pattern of correlations was similar for women and men. Greater depressive symptoms were not significantly correlated with hostility or withdrawal measures for women or men. However, spill-over of withdrawal and hostility was evident by positive associations between couple withdrawal and parent-child withdrawal as well as couple hostility with parent-child hostility. Finally, couple and parent-child hostility and withdrawal were correlated with lower family cohesion.

To evaluate both actor and partner effects, and the mediating role of couple and parent-child hostility and withdrawal as depicted in Figure 1, I applied the actor-partner

interdependence mediation model (APIMeM; Ledermann et al., 2011), within the structural equation modelling framework using MPlus (Version 8.3; Muthén et al., 2016; Muthén & Muthén, 1998). As applied to assess the self-report measures, I conducted two models to test the associations presented in Figure 1 focusing on couple and parent-child hostility (Model 1) and couple and parent-child withdrawal (Model 2). I then ran a full model to assess whether the effects for hostility and withdrawal were independent. However, an important difference with the observational results is that family cohesion was measured as a family-level variable (i.e., one score for the entire family), and thus the models did not have actor and partner effects between couple and parent-child behaviours and family cohesion but, instead, assessed whether mother's or father's behaviour predicted overall family cohesion.

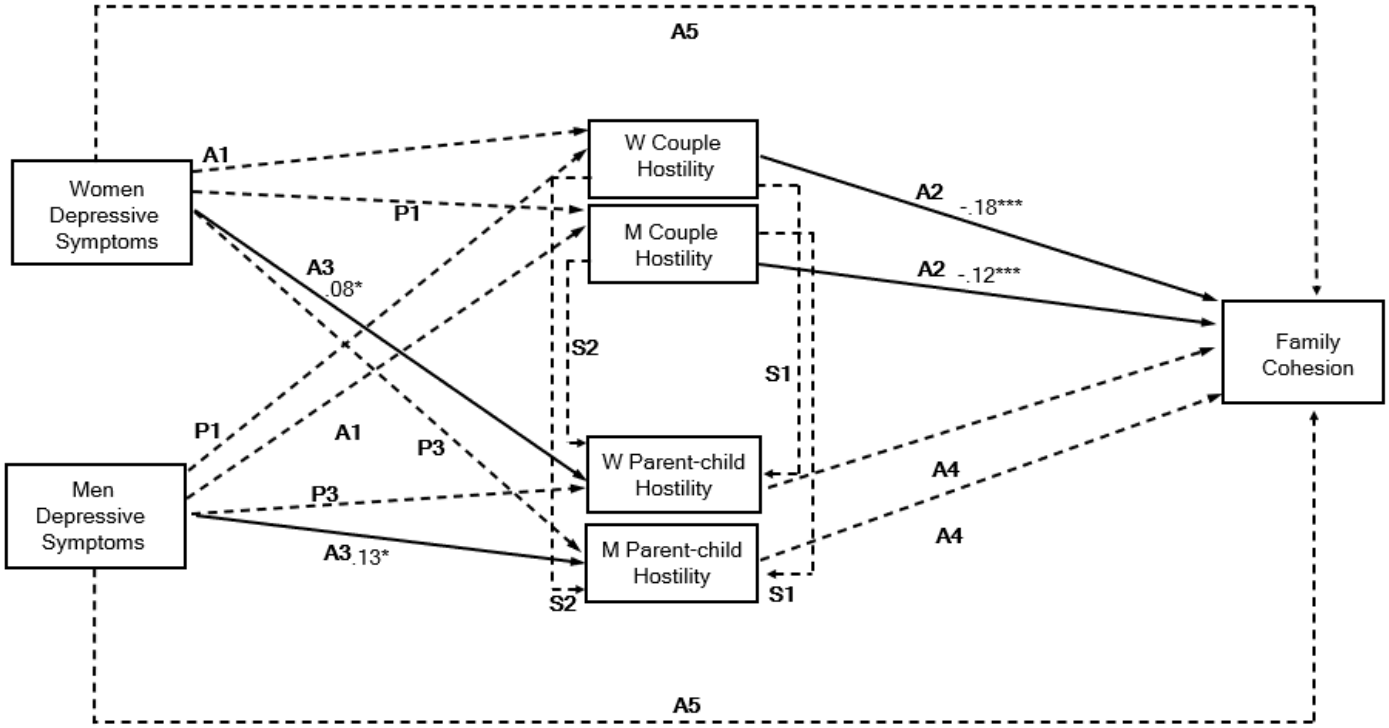
Model 1: Observed Hostility in Couple and Parent-Child Relationships

As shown in Figure 4, the first model examined observed couple and parent-child hostility. Starting from the left of Figure 4, women's and men's depressive symptoms were specified to predict both their own and their partners' couple and parent-child hostility. Paths 1-2 assess the couple relationship. Paths A1 test depressive symptoms on actors' couple hostility (e.g., women's depressive symptoms on women's couple hostility), and Paths P1 test actors' depressive symptoms on partners' couple hostility (e.g., women's depressive symptoms on men's couple hostility). Paths A2 then test whether women's and men's couple hostility predict overall family cohesion assessed at the family level. Paths 3-4 test the same processes for the parent-child relationship. Paths A3 tests depressive symptoms on actors' parent-child hostility, and Paths P3 tests actors' depressive symptoms on partners' parent-child hostility. Paths A4 then test whether women's and men's parent-child hostility predict overall family cohesion. I also assessed couple to parent-child spill-over of hostility by testing the effect of couple hostility on actors' parent-child hostility (S1), and couple hostility on partners' parent-child hostility (S2). Lastly, I directly assessed depressive symptoms on

family cohesion, with Paths A5 testing actors' depressive symptoms on family cohesion. All paths were constrained across women and men.

Figure 4

Results of Actor Partner Interdependence Mediation Model (APIMeM) Testing Observed Couple and Parent-child Hostility as Mediators of the Effects of Depressive Symptoms on Family Cohesion



Note. W = women. M = men. A refers to actor effects. P refers to partner effects. Significant paths are shown in solid lines with the standardized coefficients provided. Non-significant actor and partner effects between depressive symptoms, couple and parent-child hostility and family cohesion, spill-over effects, and direct effects between depressive symptoms and family cohesion are shown by the dashed lines. Table 8 provides the full results for all paths. *$p < .05$. **$p < .01$, ***$p < .001$.

The model fit ($\chi2(7) = 8.902$, $p = .260$, RMSEA = .031, CFI = .984, TLI = .955, SRMR = .029) did not significantly differ ($\Delta\chi^2 = 8.902$, $p > .01$) from a model in which paths across mothers and fathers were not constrained ($\chi2(0) = 0.000$, $p = .000$, RMSEA = 0.000, CFI = 1.000, TLI = 1.000, SRMR = 0.000). Finally, to determine whether couple hostility and parent-child hostility mediated any actor and partner effects of depressive symptoms on

cohesion, we calculated all indirect effects using bootstrapping with 5,000 samples to generate the confidence intervals (Preacher & Hayes, 2008).

Table 8 contains the estimates and significance tests for all paths and Table 9 presents the indirect effects. Figure 4 presents the standardized coefficients for significant paths shown as solid lines and depicts the non-significant paths shown as dashed lines. I first consider the paths involving couple hostility (Paths 1-2, Figure 4), including the relevant indirect effects. I then consider the paths involving parent-child hostility (Paths 3-4, Figure 4), including spill-over from couple to parent-child (Paths S1-S2) and associated indirect effects. Lastly, I consider the direct effects of depressive symptoms on family cohesion (Paths 5).

Table 8

Standardized Coefficients for all Paths Specified in APIMeM in Figure 4 Testing the Links between Depressive Symptoms, and Observed Hostility and Family Cohesion

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → Couple hostility										
Depressive symptoms → actors' couple hostility (A1)	-.006	-.076	.064	-.164	.869	-.008	-.108	.091	-.164	.869
Depressive symptoms → partners' couple hostility (P1)	.074	-.031	.179	1.379	.168	0.047	-.020	.114	1.370	.171
Couple hostility → Family cohesion										
Couple hostility → family cohesion (A2)	-.179***	-.265	-.092	-4.035	<.001	-.119***	-.177	-.061	-4.030	<.001
Depressive symptoms → Parent-child hostility										
Depressive symptoms → actors' parent-child hostility (A3)	.081*	.019	.144	2.548	.011	.132*	.032	.232	2.586	.010
Depressive symptoms → partners' parent-child hostility (P3)	.064	-.058	.186	1.036	.300	.036	-.032	.103	1.037	.300
Parent-child hostility → Family cohesion										
Parent-child hostility → family cohesion (A4)	-.059	-.149	.030	-1.303	.192	-.035	-.087	.018	-1.303	.192
Spill-over of Couple hostility → Parent-child hostility										
Actors' couple hostility → actors' parent-child hostility (S1)	.145	-.595	.885	.383	.701	.165	-.677	1.007	.384	.701
Actors' couple hostility → partners' parent-child hostility (S2)	.009	-.299	.316	.055	.956	.003	-.116	.123	.055	.956
Depressive symptoms → family cohesion										
Depressive symptoms → family cohesion (A5)	.012	-.068	.092	.287	.774	.011	-.065	.087	.287	.774

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

Table 9

Indirect Effects Assessing the Mediation Pathways Between Depressive Symptoms, Observed Couple and Parent-child Hostility, and Observed Family Cohesion

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Mediating Role of Couple Hostility										
Depressive symptoms → actors' couple hostility → family cohesion	.001	-.011	.014	.164	.869	.001	-.011	.013	.164	.869
Depressive symptoms → partners' couple hostility → family cohesion	-.009	-.022	.005	-1.295	.195	-.008	-.021	.004	-1.295	.195
Mediating Role of Parent-child Hostility										
Depressive symptoms → actors' parent-child hostility → family cohesion	-.005	-.013	.003	-1.161	.246	-.005	-.012	.003	-1.161	.246
Depressive symptoms → partners' parent-child hostility → family cohesion	-.002	-.008	.003	-.810	.418	-.002	-.007	.003	-.810	.418
Mediating Role of Spill-over of Couple Hostility										
Depressive symptoms → actors' couple hostility → actors' parent-child hostility → family cohesion	.000	-.001	.001	.156	.876	.000	-.001	.001	.156	.876
Depressive symptoms → actors' couple hostility → partners' parent-child hostility → family cohesion	.000	.000	.000	.051	.960	.000	.000	.000	.051	.960
Depressive symptoms → partners' couple hostility → actors' parent-child hostility → family cohesion	.000	-.001	.001	-.055	.956	.000	-.001	.000	-.055	.956
Depressive symptoms → partners' couple hostility → partners' parent-child hostility → family cohesion	.000	-.003	.002	-.356	.722	.000	-.003	.002	-.356	.722

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

Paths 1-2: Depressive Symptoms, Couple Hostility, and Family Cohesion. For both women and men, the effects of depressive symptoms on both their own and their partners' couple hostility were not significant. However, greater couple hostility predicted lower family cohesion (Path A2; see Table 8 and Figure 4). The top of Table 9 (see *Mediating Role of Couple Hostility* section) shows none of the indirect effects assessing the mediating role of actors' and partners' hostility were significant.

Paths 3-4: Depressive Symptoms, Parent-child Hostility, and Family Cohesion. Only the actor effects (Paths A3), and not the partner effects (Paths P3), of depressive symptoms on parent-child hostility were significant: Greater depressive symptoms predicted greater actors' parent-child hostility. However, parent-child hostility did not predict family cohesion, and the indirect effects assessing the depressive symptoms, parent-child hostility, and family cohesion pathway were not significant (see rows 3-4, Table 9).

Paths S1-S2: Depressive Symptoms and Couple Hostility Spilling Over to Parent-Child Hostility and Family Cohesion. Finally, Paths S1 and S2 between couple hostility and parent-child hostility were not significant, and none of the indirect spill-over effects were significant (see rows 5-8, Table 9).

Remaining Direct Effects (Paths 5). In addition to the lack of significant indirect effects testing whether actor and partner couple hostility accounts for some of the links between depressive symptoms and family cohesion, the direct path between actors' depressive symptoms and family cohesion (Paths A5) was also non-significant. These results suggest that depressive symptoms did not directly or indirectly predict lower observed family cohesion within the context of the free play interaction.

Model 2: Observed Withdrawal in Couple and Parent-Child Relationships

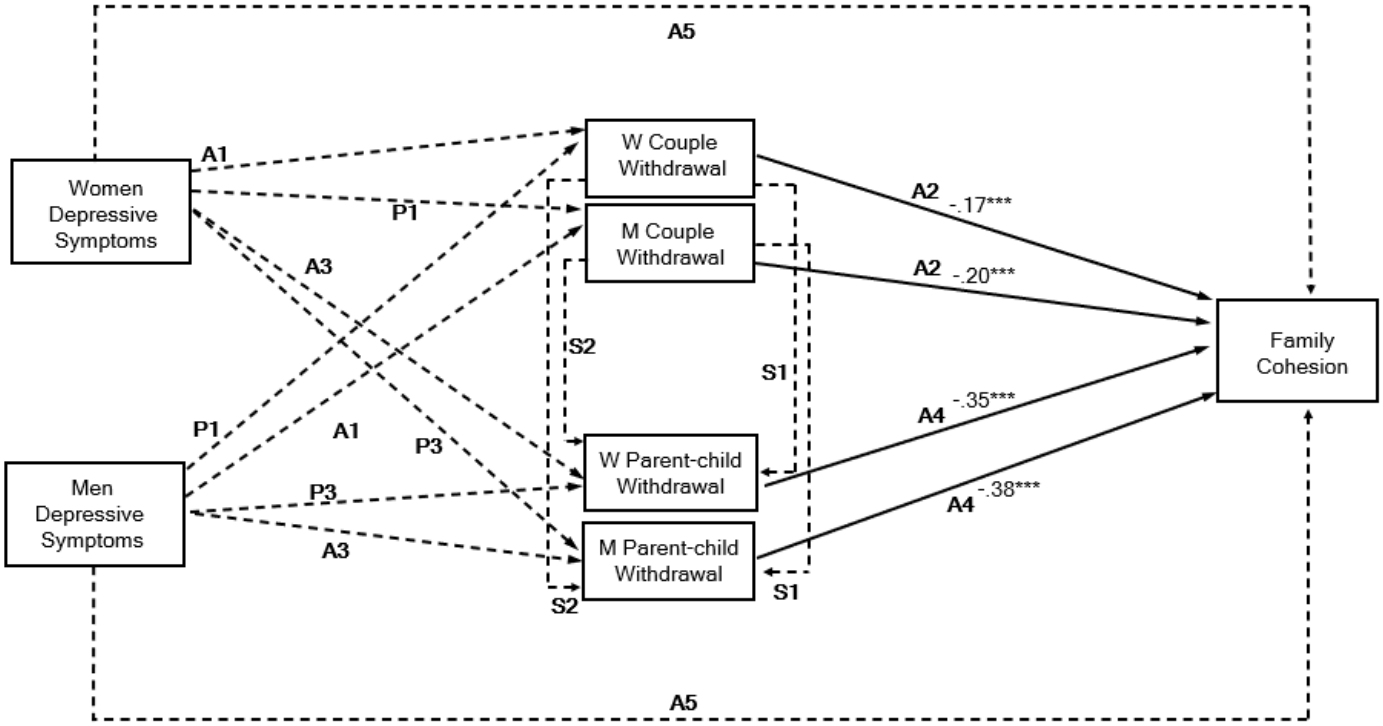
As shown in Figure 5, I ran a concomitant model to test the links between depressive symptoms, actors' own and their partners' couple and parent-child withdrawal, and family

cohesion. All paths were included to assess each actor and partner effect while controlling for all other direct and indirect pathways, regardless of whether they were significant or not. All paths were constrained across women and men. The model fit ($\chi2(7) = 7.979$, $p = .334$, RMSEA = 0.022, CFI = .998, TLI = .985, SRMR = .026) did not significantly differ ($\Delta\chi^2 = 7.979$, $p > .01$) from a model in which paths across mothers and fathers were not constrained ($\chi2(0) = 0.000$, $p = .000$, RMSEA = 0.000, CFI = 1.000, TLI = 1.000, SRMR = 0.000). Finally, to determine whether couple withdrawal and parent-child withdrawal mediated any actor and partner effects of depressive symptoms on cohesion, we calculated all indirect effects using bootstrapping with 5,000 samples to generate the confidence intervals (Preacher & Hayes, 2008).

Table 10 contains the estimates and significance tests for all paths and Table 11 presents the indirect effects. Figure 5 presents the standardized coefficients for significant paths shown as solid lines and depicts the non-significant paths shown as dashed lines. I first consider the paths involving couple withdrawal (Paths 1-2, Figure 5), including the relevant indirect effects. I then consider the paths involving parent-child withdrawal (Paths 3-4, Figure 5), including spill-over from couple to parent-child (Paths S1-S2) and associated indirect effects. Lastly, I consider the direct effects of depressive symptoms on family cohesion (Paths 5).

Figure 5

Results of Actor Partner Interdependence Mediation Model (APIMeM) Testing Observed Couple and Parent-child Withdrawal as Mediators of the Effects of Depressive Symptoms on Family Cohesion



Note. W = women. M = men. A refers to actor effects. P refers to partner effects. Significant paths are shown in solid lines with the standardized coefficients provided. Non-significant actor and partner effects between depressive symptoms, couple and parent-child withdrawal and family cohesion, spill-over effects, and direct effects between depressive symptoms and family cohesion are shown by the dashed lines. Table 10 provides the full results for all paths. *$p < .05$. **$p < .01$, ***$p < .001$.

Table 10

Standardized Coefficients for all Paths Specified in APIMeM in Figure 5 Testing the Links between Self-reported Depressive Symptoms and Observed Withdrawal and Observed Family Cohesion

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → Couple withdrawal										
Depressive symptoms → actors' couple withdrawal (A1)	-.004	-.101	.093	-.079	.937	-.003	-.080	.073	-.079	.937
Depressive symptoms → partners' couple withdrawal (P1)	.010	-.070	.090	.243	.808	.011	-.081	.104	.243	.808
Couple withdrawal → Family cohesion										
Couple withdrawal → family cohesion (A2)	-.167***	-.216	-.119	-6.750	<.001	-.202***	-.261	-.144	-6.781	<.001
Depressive symptoms → Parent-child withdrawal										
Depressive symptoms → actors' parent-child withdrawal (A3)	.020	-.052	.092	.543	.587	.017	-.045	.080	.545	.586
Depressive symptoms → partners' parent-child withdrawal (P3)	-.041	-.108	.026	-1.198	.231	-.042	-.111	.027	-1.201	.230
Parent-child hostility → Family cohesion										
Parent-child withdrawal → family cohesion (A4)	-.351***	-.405	-.298	-12.914	<.001	-.382***	-.438	-.325	-13.334	<.001
*Spill-over of Couple withdrawa*l → *Parent-child withdrawal*										
Couple withdrawal → actors' parent-child withdrawal (S1)	.694	-.096	1.483	1.722	.085	.772	-.119	1.663	1.698	.090
Couple withdrawal → partners' parent-child withdrawal (S2)	-.135	-.425	.155	-.910	.363	-.177	-.553	.199	-.922	.357
Depressive symptoms → family cohesion										
Depressive symptoms → family cohesion (A5)	-.009	-.059	.041	-.367	.714	-.009	-.056	.039	-.367	.714

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

Table 11

Indirect Effects Assessing the Mediation Pathways Between Depressive Symptoms, Observed Couple and Parent-child Withdrawal, and Observed Family Cohesion

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Mediating Role of Couple Withdrawal										
Depressive symptoms → actors' couple withdrawal → family cohesion	.001	-.016	.017	.079	.937	.001	-.015	.016	.079	.937
Depressive symptoms → partners' couple withdrawal → family cohesion	-.002	-.018	.014	-.243	.808	-.002	-.017	.014	-.243	.808
Mediating Role of Parent-child Withdrawal										
Depressive symptoms → actors' parent-child withdrawal → family cohesion	-.007	-.032	.018	-.544	.587	-.007	-.031	.017	-.544	.587
Depressive symptoms → partners' parent-child withdrawal → family cohesion	.016	-.010	.041	1.195	.232	.015	-.009	.039	1.195	.232
Mediating Role of Spill-over of Couple Withdrawal										
Depressive symptoms → actors' couple withdrawal → actors' parent-child withdrawal → family cohesion	.001	-.023	.025	.079	.937	.001	-.022	.023	.079	.937
Depressive symptoms → actors' couple withdrawal → partners' parent-child withdrawal → family cohesion	.000	-.005	.005	-.079	.937	.000	-.005	.005	-.079	.937
Depressive symptoms → partners' couple withdrawal → actors' parent-child withdrawal → family cohesion	.001	-.005	.006	.231	.818	.001	-.004	.006	.231	.818
Depressive symptoms → partners' couple withdrawal → partners' parent-child withdrawal → family cohesion	-.003	-.027	.021	-.238	.812	-.003	-.026	.020	-.238	.812

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

Paths 1-2: Depressive Symptoms, Couple Withdrawal, and Family Cohesion. For both women and men, the effects of depressive symptoms on both their own and their partners' couple withdrawal were not significant. However, greater couple withdrawal predicted lower family cohesion (Path A2; see Table 10 and Figure 5). The top two rows of Table 11 (see *Mediating Role of Couple Withdrawal* section), shows none of the indirect effects assessing the mediating role of actors' and partners' withdrawal were significant.

Paths 3-4: Depressive Symptoms, Parent-child Withdrawal, and Family Cohesion. For both women and men, the effect of depressive symptoms on both their own and their partners' parent-child withdrawal were not significant. However, parent-child withdrawal predicted lower family cohesion (Path A4; see Table 10 and Figure 5). Nonetheless, given the non-significant effect of depressive symptoms, there was no significant indirect pathways between depressive symptoms, partner-child withdrawal and family cohesion (see rows 3-4, Table 11).

Paths S1-S2: Depressive Symptoms and Couple Withdrawal Spilling Over to Parent-Child Withdrawal and Family Cohesion. Finally, Paths S1 and S2 between couple withdrawal and parent-child withdrawal were not significant, and none of the indirect spill-over effects were significant (see rows 5-8, Table 9).

Remaining Direct Effects (Paths 5). In addition to the lack of significant indirect effects indicating that actor and partner couple withdrawal accounts for some of the links between depressive symptoms and family cohesion, the direct path between actors' depressive symptoms and family cohesion (Paths A5) was also non-significant. These results suggest that depressive symptoms did not directly or indirectly predict lower observed family cohesion within the context of the free play interaction.

Model 3. Full Model Including Hostility and Withdrawal

I ran a final model including all of actor and partner paths assessing observed hostility and withdrawal jointly to assess whether the results were altered controlling for the shared associated between hostility and withdrawal; see Table 3). In Appendix B, I reproduce the results in Table 8-11 to directly compare the main results controlling for the other type of behaviour (hostility controlling withdrawal and withdrawal controlling hostility; see Tables B5-B8). Below, I focus on evaluating whether the findings from the initial models held when controlling for the direct and indirect paths of the other type of behaviour (hostility or withdrawal).

Observed Hostility when Controlling for Withdrawal in Couple and Parent-Child Relationships. When controlling for withdrawal (see Table B5), all significant hostility paths shown in Table 8 remained the same, with one exception. Women's and men's couple hostility predicting family cohesion was no longer significant after controlling for withdrawal. However, the indirect effects linking depressive symptoms to actors' and partners' couple hostility on actors' and partners' family cohesion shown in Table 8 remained unchanged (see Table B6).

Observed Withdrawal when Controlling for Hostility in Couple and Parent-Child Relationships. When controlling for hostility (see Table B7), all significant withdrawal paths shown in Table 10 remained, however the spill-over paths also became significant. For both women and men, couple withdrawal predicted their own and their partners' parent-child withdrawal, suggesting there may be a unique spill-over process occurring for withdrawal that is not present with hostility. However, this spill-over does not appear to go on to predict lower family cohesion, with all indirect pathways (see Table 11) remaining non-significant (see Table B8).

Summary of Observed Results

In sum, the analyses for the observational measures suggested that couple and parent-child hostility and withdrawal within the context of a free-play interaction did not support the predicted links between depressive symptoms and family cohesion as was supported by the self-report assessments. Although depressive symptoms predicted parent's own parent-child hostility, it did not predict couple hostility or couple or parent-child withdrawal. Moreover, although couple hostility and couple and parent-child withdrawal predicted lower family cohesion, because depressive symptoms did not predict variance in these behaviours, the indirect effects testing a pathway between depressive symptoms, couple and parent-child withdrawal, and family cohesion were non-significant. Contrasting this pattern with the self-report results suggesting depressive symptoms predict lower family cohesion via couple hostility and withdrawal, the observational results suggest that depressive symptoms may not determine couple or parent-child behaviour and family cohesion when observed during a free-play interaction.

Discussion

Depressive symptoms can cause a range of physiological, emotional, and cognitive challenges, which often create interpersonal difficulties, with far-reaching consequences on both the impacted individual and their family members. Thus, it is expected that the strain of depressive symptoms would negatively impact family cohesion; however, the impact of parents' depression on overall family outcomes has remained largely unresearched. The current research aimed to investigate how parents' depressive symptoms undermine family cohesion by simultaneously assessing the effect of depressive symptoms on the behaviour between intimate relationship partners (couple subsystem) as well as between parents and children (parent-child subsystem). As shown in Figure 1, I predicted that parents' depressive symptoms would lead to both actors' and partners' hostility and withdrawal in the couple

relationship as well as indirect and direct hostility and withdrawal the parent-child relationship, which in turn would predict reduced overall family cohesion. I tested these predictions using two methods: (1) self-report assessments of typical couple, parent-child and family dynamics, and (2) observational assessment of couple, parent-child and family dynamics in a triadic free-play session in the laboratory. The results differed across methods. The self-report analyses identified couple hostility and withdrawal reported by actors and partners as explanatory variables in the links between depressive symptoms and family cohesion. However, the observational assessments of families within the laboratory revealed few associations between parents' depressive symptoms, couple and parent-child behaviours, and family cohesion.

In the following sections, I discuss the key findings and implications. I first focus on the analyses of established self-report assessments and outline how the results provide insight into the role of (1) couples vs. parent-child subsystems, 2) actor vs. partner effects, and 3) hostility vs. withdrawal, as well as additional unexpected findings. I then consider the observational findings and the implications for possible differences between self-report vs. observational assessments. In each section, I outline how the findings support and advance the literature before considering the strengths, limitations, and future directions of the current research.

Main Findings of the Self-report Assessment of Couple, Parent-Child and Family Processes

As shown in Table 12 and Figure 6, analyses of parents' self-reports provided evidence that greater parents' depressive symptoms were associated with both greater actors' and partners' couple hostility and withdrawal, which in turn predicted lower actors' and partners' family cohesion. By contrast, although greater depressive symptoms were also associated with greater actors' parent-child hostility, indirect effects did not support that

parent-child hostility helped explain (i.e., mediated) the links between depressive symptoms and family cohesion. However, the models provided evidence of couple to parent-child spill-over pathways, in which actors' greater couple hostility and withdrawal predicted their own hostility and withdrawal in the parent-child relationship, with actors' couple withdrawal also spilling over into partners' parent-child withdrawal. The spill-over of actors' and partners' withdrawal was, in turn, associated with lower actors' and partners' family cohesion, respectively. These findings provide new evidence of parents' depressive symptoms as a key variable that can negatively impact cohesion. The findings also highlight the importance of taking a family systems approach in understanding the role of the couple and parent-child subsystems and actor and partner effects, as well as the importance of distinguishing between the different types of family behaviours.

Table 12

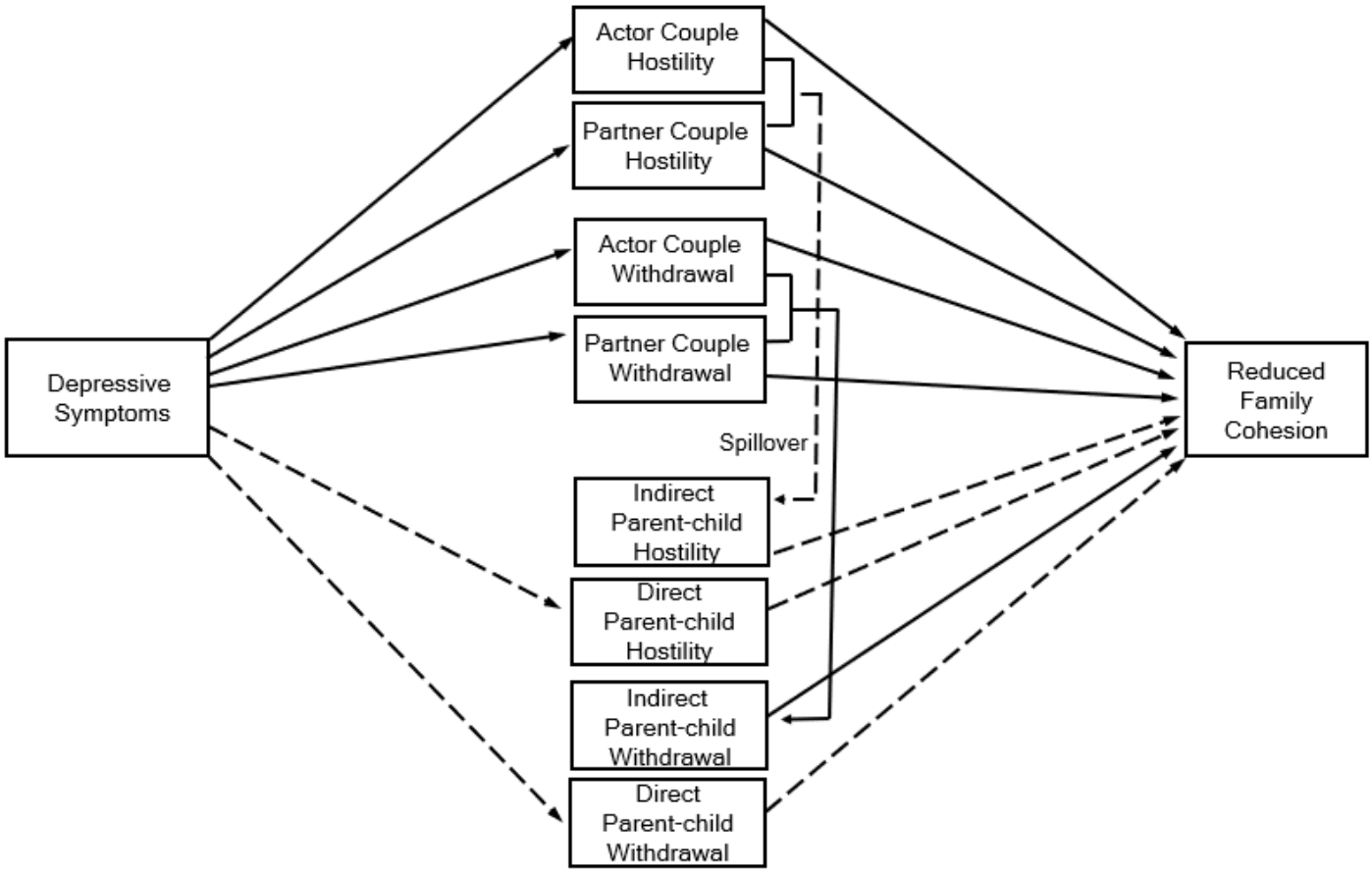
Summary of Results Examining the Links Between Depressive Symptoms, Self-reported Hostility and Withdrawal in Couple and Parent-child Relationships, and Family Cohesion

	Hostility	Withdrawal
Couple subsystem (Actor)	• Greater depressive symptoms were associated with greater *actors'* couple hostility	• Greater depressive symptoms were associated with greater *actors'* couple withdrawal
Couple subsystem (Partner)	• Greater depressive symptoms were associated with greater *partners'* couple hostility	• Greater depressive symptoms were associated with greater *partners'* couple withdrawal
Parent-child subsystem (Indirect i.e. spill-over)	• Greater actors' *couple hostility* was associated with greater actors' *parent-child hostility*	• Greater actors' *couple withdrawal* was associated with greater actors' and partners' *parent-child withdrawal*
Parent-child subsystem (Direct)	• Greater depressive symptoms were associated with greater *actors'* parent-child hostility	• Greater depressive symptoms were *not* associated with actors' or partners' parent-child withdrawal
Cohesion	• Greater depressive symptoms were associated with greater *actors'* and *partners'* couple hostility, which in turn predicted both lower *actors'* and *partners'* own and each other's family cohesion • Greater depressive symptoms also remained a direct predictor of lower family cohesion	• Greater depressive symptoms were associated with greater *actors'* couple withdrawal, which in turn was associated with lower *actors'* and *partners'* family cohesion • Greater depressive symptoms were associated with greater *partners'* couple withdrawal, which in turn was associated with lower *partners'* family cohesion • Greater depressive symptoms were associated with greater *actors'* couple withdrawal, which spilled over to greater *actors'* parent-child withdrawal and, in turn, lower *actors'* family cohesion • Greater depressive symptoms were associated with greater *partners'* couple withdrawal, which spilled over to greater *partners'* parent-child withdrawal and, in turn, lower *partners'* family cohesion • Greater depressive symptoms also remained a direct predictor of lower family cohesion

Note. The effects were equivalent across women and men.

Figure 6

Self-reported Results of how Depressive Symptoms Negatively Affected Family Cohesion Mediated by both Actors' and Partners' Couple and Parent-child Hostility and Withdrawal



Note. This model represents self-report data only. Indirect and direct parent-child hostility and withdrawal encompasses both actors and partners results. Significant mediational paths are shown in solid lines. Non-significant effects between depressive symptoms, actors' and partners' parent-child hostility and withdrawal, and family cohesion are shown by the dashed lines. Family cohesion represents actors' and/or partners' self-reported family cohesion (see Tables 5 and 7 for full results).

Couple vs. Parent-Child Behaviours

The couple subsystem played a more significant role in explaining why depressive symptoms may undermine family cohesion compared to the parent-child subsystem. As summarised in Table 12 and Figure 6, although greater depressive symptoms were associated with greater couple and parent-child hostility, only couple hostility went on to predict lower family cohesion. Additionally, greater depressive symptoms were only associated with greater couple, and not parent-child, withdrawal, which in turn predicted lower family

cohesion. Greater parent-child withdrawal only came from the spill-over pathways, with the indirect pathways indicating that the parent-child relationship only negatively impacted family cohesion when actors' and partners' withdrawal from the couple relationship spilled over into their parent-child relationship, which then went on to predict lower family cohesion.

This pattern showing that the couple subsystem, compared to the parent-child system, may play a bigger role in negatively impacting family cohesion fits with previous literature describing the couple relationship as the "cornerstone" of the family unit (Sturge-Apple et al., 2006). The results may indicate that depressive symptoms first impact the couple relationship, which directly undermines lower family cohesion, but also spills over into the parent-child relationship, emphasising the impact of parents' relationships in influencing the overall functioning of the family. The parent-child relationship may be less significant in negatively impacting family cohesion, despite parents with elevated depressive symptoms reporting greater parent-child hostility. Perhaps parents may attribute greater hostility as an expected aspect of parenting but can nonetheless still experience their family as cohesive. Additionally, parents reported experiencing withdrawal in their couple relationship but not in their parent-child relationship. Parents may have exhibited demand characteristics (Orne, 2009), in which they were more hesitant to report negativity about their parenting (i.e. withdrawing from parenting) compared to their couple behaviour. Additionally, parents may have more readily reported hostile parenting as opposed to withdrawn parenting, as hostile parenting is still indicative of engaged parenting, with some parents endorsing harsh parenting strategies as a form of discipline (Shumow et al., 1998). Thus, reporting hostile parenting behaviour may not have been perceived as negativity about their parenting the way withdrawn parenting might have been.

Another explanation for the lack of parent-child withdrawal may be because depressive symptoms are commonly portrayed to be associated more with withdrawn

behaviours as opposed to hostile behaviours (Parle, 2012). Thus, parents who are experiencing depressive symptoms may be more aware of the risk of withdrawing from their children and try harder to prevent this and protect their children from their depressive symptoms (Gladstone et al., 2011), therefore increasing their engagement with their children. Accordingly, parents' greater depressive symptoms were not associated with self-reported parent-child withdrawal. However, this vigilance may not have extended into the couple relationship, where greater self-reported withdrawal was evident. Alternatively, the compensatory hypothesis suggests when a desired affect or behaviour is missing in one subsystem (e.g., poor couple relationship dynamics), individuals may seek to fulfil their desires and needs in additional subsystems (e.g., satisfying parent-child dynamics), thereby transferring the opposite valence of affect and behaviour across subsystems (Krishnakumar & Buehler, 2000; Oosterhouse et al., 2020). Thus, the greater withdrawal in the couple subsystem may have caused parents to become more invested in the parent-child relationship to compensate for the lack of engagement in their couple relationship, and subsequently, withdrawal was not present in the parent-child relationship. Although parents did not report directly withdrawing from the parent-child relationship, parent-child withdrawal was still evidenced through spill-over. Depressive symptoms may make the task of compartmentalising challenging; thus, difficulties in the couple relationship end up spilling over and adversely affecting the broader family unit. This proliferation of withdrawal from one subsystem to another is indicative of poorly defined boundaries between subsystems, which subsequently lowers family cohesion (Coe et al., 2018; Sturge-Apple et al., 2010).

This research is novel by providing a direct side-by-side comparison of the couple and parent-child subsystem, which demonstrates that while all family subsystems are integrated and important in influencing the overall outcome, the processes in which these occur within each subsystem are not identical. Parents' depressive symptoms may reduce overall family

cohesion via couple hostility and withdrawal, and additionally, parents' depressive symptoms may reduce overall family cohesion via couple withdrawal spilling over and creating parent-child withdrawal. Thus, the relationship between parents plays a key role in determining whether parents' depressive symptoms go on to negatively impact family cohesion.

Actor vs. Partner Effects

The findings provide good evidence that depressive symptoms affect both actors' and partners' family behaviour. As summarised in Table 12 and Figure 6, greater depressive symptoms were associated with greater actors' and partners' hostility and withdrawal, which in turn predicted both lower actors' and partners' family cohesion (with a single exception of null associations between partners' couple withdrawal and actors' family cohesion). Thus, these results clearly illustrate that depressive symptoms shape not only the behaviour of the person with elevated depressive symptoms but also their partners' couple and parent-child behaviour, as reported by the partner, and in turn, the family as a whole.

These significant actor and partner effects are consistent with previous literature. The impacts of actors' depressive symptoms have been well established, with greater depressive symptoms found to be associated with actors' greater anger (Biaggio & Godwin, 1987) and criticism (Hooley, 1986; Leahy, 2002) toward their partner, as well as more hostile communication styles (Coyne et al., 2002; Zuroff & Duncan, 1999). Additionally, greater depressive symptoms have been linked with a greater likelihood of actors physically (Chapman et al., 1976), emotionally (Sharabi et al., 2016), verbally (Barry et al., 2019), and sexually (Bodenmann & Ledermann, 2008), withdrawing from their partners. The significant partner effects are also consistent with previous literature, which has provided evidence that partners may respond to actors' greater depressive symptoms with their own hostility. Previous research has identified emotional contagion (Sharabi et al., 2016), feelings of burden (Coyne et al., 1987), and matching pre-existing hostility in the relationship (Shelton &

Harold, 2008) as processes by which partners demonstrate greater hostility. Finally, partners may also engage in withdrawn behaviour in response to actors' depressive symptoms, with previous research revealing feelings of tiresomeness (Starr & Davila, 2008), rejection (Kahn & Garrison, 2009), and unreciprocated engagement (Schaufeli, 2006), as well as contagion (Bodenmann & Randall, 2013; Hennig-Thurau et al., 2006) and self-silencing (Whiffen et al., 2007), to be processes leading to partners withdrawal from the relationship. Furthermore, is it possible that the presence of both hostility and withdrawal in actors and partners may have prompted couples to engage in a reciprocating hostile-withdrawn pattern, as evidenced in previous research (Knobloch-Fedders et al., 2014).

Thus, this combination of greater actor *and* partner hostility resulting in more negative interactions, and greater actor *and* partner withdrawal resulting in decreased positive interactions, may create an environment characterised by low positive affect and low mutual engagement thereby reducing overall family cohesion. While previous research has demonstrated both actors and partners to be impacted by one person's depressive symptoms, the current research expands on this literature by identifying both actors and partners to be active contributors to the overall cohesiveness of the family. This emphasises the importance of taking a family-wide approach when assessing family outcome variables such as family cohesion.

Hostility vs. withdrawal

The results were largely comparable when modelling hostility and withdrawal simultaneously, highlighting that depressive symptoms likely produce a combination of both hostility and withdrawal in actors and partners, which in turn undermines family cohesion (see Table 12 and Figure 6). However, the results indicate that withdrawal was slightly more prominent than hostility. For example, although depressive symptoms predicted spill-over of actors' couple hostility and withdrawal into the parent-child relationship, only the spill-over

of couples' withdrawal went on to predict lower family cohesion. The spill-over of withdrawal is consistent with previous literature, with prior research suggesting the withdrawal in the couple relationship can create an internal state of noise (Donovan et al., 1998), emotional indifference (Sturge-Apple et al., 2006), and neglect (Gelfand & Teti, 1990), which carries over into parenting. However, the current research expands on this literature by illustrating that greater actors' couple withdrawal not only predicts actors' own withdrawal in the parent-child relationship but also partners' withdrawal. This partner spill-over effect suggests that actors' depressive symptoms and withdrawal in the couple relationship are powerful enough to create an internal state of noise, emotional indifference, and neglect in partners, thereby impeding partners' relationships with children despite them not experiencing any depressive symptoms themselves. This highlights the widespread impact depressive symptoms can have on the overall family. The same pattern was not evidenced for the spill-over of hostility. It may be the case that, because hostility is a more active emotion (Zimmer-Gembeck et al., 2013), partners are more aware of actors' hostility and therefore are able to compartmentalise it into the couple subsystem and more effectively prevent it from spilling over into their parent-child relationships. In contrast, withdrawal is a more passive emotion (Zimmer-Gembeck et al., 2013), and thus partners may not be as aware of the presence or impact of couple withdrawal and, therefore, less able to prevent withdrawal from spilling over and impacting their parent-child relationship.

Another novel finding of the current research is the different roles parent-child hostility and withdrawal had on family cohesion, highlighting the importance of assessing these constructs separately. Previous literature has demonstrated that both greater hostility and withdrawal can negatively impact family cohesion; however, they do so via different processes. Greater hostility reduces the amount of positive affect expressed in the family, thereby reducing the amount of warmth, closeness, and supportiveness, and subsequently,

feelings of cohesion (Tissot et al., 2019). In contrast, greater withdrawal reduces the degree of mutual engagement in the family, thereby reducing participation, cooperation, and a sense of unity and togetherness between family members, subsequently reducing feelings of cohesion (McHale & Fivaz-Depeursinge, 1999). In the current research, although greater depressive symptoms were associated with greater actors' parent-child hostility and not withdrawal, this hostility did not go on to predict lower family cohesion. However, parent-child withdrawal, which appeared to be a function of spill-over of couple withdrawal, did go on to predict lower family cohesion. These findings suggest that while both hostility and withdrawal are expressed in the family, the lower mutual engagement between family members plays a more pivotal role in reducing family cohesion. In particular, when parents are withdrawing from their partners and children, there may be few opportunities for families to both experience positive affect and mutually engage or connect, and thus parents reported lower family cohesion.

In sum, although previous literature has suggested that hostility and withdrawal may undermine family cohesion, the current research offers new evidence of how this may occur in the context of parents' depressive symptoms. Greater parents' depressive symptoms generate both greater couple hostility and withdrawal, which can undermine family cohesion. However, parents' withdrawal may be more impactful than hostility because it is more likely to spill over into the parent-child relationship, further undermining family cohesion. Clarifying these distinctions and understanding how hostility and withdrawal emerge and spill over across the family system is important for future investigations to identify how to increase cohesion in families in which one or both parents are high in depressive symptoms.

Additional Unexpected Findings of the Self-reported Assessment: Parent-Child Hostility and Greater Partner-Reported Cohesion

As summarised above, the various significant pathways generally demonstrated that greater depressive symptoms were associated with lower family cohesion. However, contrary to previous research, greater actors' parent-child hostility was associated with *greater* partners' family cohesion. This unexpected effect may be due to a range of factors. Firstly, similar to how hostility expressed in the couple subsystem may be interpreted as an investment in the relationship (Baker et al., 2014; Overall, 2018), partners may interpret actors' hostility towards children as actors' investment and commitment to parenting, thereby perceiving the overall family as more cohesive. Secondly, previous research has suggested that in families in which one parent is neglecting an element of parenting, the other parent may increase engagement in that area to compensate (Simons & Conger, 2007). Thus, partners may respond to actors' parent-child hostility with greater warmth towards children to compensate for the lack of warmth from actors, producing overall greater positive affect, engagement, and subsequently greater feelings of cohesion. Lastly, the presence of actors' parent-child hostility may prompt partners to offer additional support to actors, which can serve as a buffer against any hostility expressed in the family while simultaneously increasing emotional intimacy between partners (Cutrona, 1996), and thus, partners' report experiencing greater cohesion. This unexpected finding requires replication but does illustrate a key theme: the way behaviours spill over across family systems can be complex, and although depressive symptoms and hostility/withdrawal in one family member may often create disruptions in other family relationships, compensation processes can also produce unexpected, seemingly positive effects.

Main Findings of the Observational Assessment of Couple, Parent-Child and Family Processes

As summarised in Table 13, observational analyses revealed few associations between parents' depressive symptoms, couple and parent-child behaviour, or family cohesion. Greater depressive symptoms were only associated with greater actors' parent-child hostility, but parent-child hostility did not undermine family cohesion. Moreover, although greater couple hostility and withdrawal and greater parent-child withdrawal were associated with lower family cohesion, none of these associations mediated the links between parents' depressive symptoms and family cohesion. Irrespective of the non-significant associations, when contrasted to the previous results, these observational findings still provide valuable insight into the processes which may contribute to how parents' depressive symptoms impact the couple and parent-child subsystem and, thereby, the overall functioning of the family.

A possible explanation for why the self-report measures were not replicated with the observational data is that the context in which the variables were assessed was not directly comparable. For example, couples' self-reported hostility and withdrawal were assessed within the context of couple conflicts, while the observed hostility and withdrawal between partners were assessed during a non-conflictual free play interaction. This is different to previous observational research, which has mainly assessed parents' hostility and withdrawal arising from depressive symptoms in the context of conflictual context, which is likely to amplify the poor reactivity, biases and emotion regulation arising from depressive symptoms (Beach, 2014; Du Rocher Schudlich et al., 2011; Kahn et al., 1985). Similarly, the parent-child self-report assessments of hostility and withdrawal assessed general responses to potentially challenging situations with children rather than at times of play and relaxation. Thus, it might be the case that the free-play activity design was not a diagnostic situation to

identify the presence or likelihood of hostility and withdrawal that arises from depressive symptoms.

Table 13

Summary of Results Examining the Links Between Depressive Symptoms, Observed Hostility and Withdrawal in Couple and Parent-child Relationships, and Family Cohesion

	Hostility	Withdrawal
Couple subsystem (Actor)	• Greater depressive symptoms were *not* associated with actors' hostility	• Greater depressive symptoms were *not* associated with actors' withdrawal
Couple subsystem (Partner)	• Greater depressive symptoms were *not* associated with partners' hostility	• Greater depressive symptoms were *not* associated with partners' withdrawal
Parent-child subsystem (Indirect, i.e. spill-over)	• Greater couple hostility was *not* associated with actors' or partners' parent-child hostility	• Greater couple withdrawal was *not* associated with actors' or partners' parent-child withdrawal
Parent-child subsystem (Direct)	• Greater depressive symptoms were associated with greater *actors'* parent-child hostility	• Greater depressive symptoms were *not* associated with actors' parent-child withdrawal
Cohesion	• Greater couple hostility was associated with lower family cohesion	• Greater couple withdrawal was associated with lower family cohesion • Greater parent-child withdrawal was associated with lower family cohesion

Note. Results were equivalent across women and men.

Similarly, assessments of family cohesion differed across methods. The self-report data assessed parents' global sense of family cohesion, whereas the free-play observation assessed family cohesion based on a 5-minute snapshot of the family in conditions that might have influenced the appearance of family cohesion. For example, families were video recorded, which may have given rise to demand characteristics (Orne, 2009) by prompting families to behave more favourably compared to how parents reported experiencing their family's behaviour. Additionally, families were only provided with two chairs close together and mostly two-player toys. Accordingly, how families engaged with each other during this

time may not have been reflective of how they interact outside of the laboratory. Additionally, only triadic family interactions (i.e., mother, father, and child) were observationally coded, whereas parents of multiple children likely considered the wider family dynamics when reporting family cohesion, which may have been different to their free-play activity with only one child present. The free play activity also differed from previous observational assessments, which have examined cohesion as families completed collaborative tasks, such as building a Lego house (Coe et al., 2018) or family-based discussions (Lindahl & Malik, 2011), which require mutual engagement, a key element of cohesion (McHale & Fivaz-Depeursinge, 1999), thereby creating an environment where cohesion could be more easily assessed.

In sum, the non-demanding nature of the free-play interaction may have resulted in parents' depressive symptoms not impacting family cohesion as high levels of cohesion were not required. These contextual differences between self-reported and observational assessments were reflected in the variables scores, with the means of the self-reported measures of couple and parent-child hostility and withdrawal and family cohesion higher than the observational measures (see Table 2). Lastly, depressive symptoms are often accompanied by negatively biased thinking (Vanhee et al., 2018), which may have resulted in parents high in depressive symptoms perceiving family cohesion as lower than what was objectively observed. Thus, the self-report data, which was reliant on parents' perceptions, may have produced more significant results which were not reflected in the observational results. Yet, the simultaneous examination of both actor's and partner's perceptions of family cohesion revealed that partners also reported lower family cohesion when actors had elevated depressive symptoms. This challenges the notion that reports of lower family cohesion is solely due to negatively biased thinking and verifies that the association between the two

variables, although undetectable during a free-play interaction, exists and is experienced by both actors experiencing depressive symptoms and their partners.

Despite inconsistencies with the self-report measures, the observational results (and the analysis of the differences across methods above) advance the currently small existing body of literature on observed family cohesion by identifying possible important contextual considerations for future research. For example, observing family cohesion may need to involve family activities that are challenging enough to activate the vulnerabilities associated with depressive symptoms as well as provide the conditions for families to demonstrate mutual engagement and positive affect, which are characteristic of cohesion. Additionally, the observational results inadvertently shift away from the predominant theme in the literature that parents' depressive symptoms are inherently detrimental to the outcomes of the family. The measure of parents' depressive symptoms remained constant across the self-report and observational analyses; thus, it is possible that the contrasting results suggest the way in which parents' depressive symptoms influence the family, both in terms of each subsystem and as a whole, is not fixed, thereby highlighting that the context in which parents' depressive symptoms may diminish family cohesion (i.e., during parents' conflictual interactions) is an important consideration.

Strengths, Limitations and Directions for Future Research

The current research broke new ground in the family cohesion literature, given that factors influencing family cohesion are largely under-researched. Although directional causality between the variables cannot be definitively determined from this study, the significant associations not only identified parents' depressive symptoms as one of the factors that likely impede family cohesion but also provided valuable insight into the processes of how this may occur. By assessing the couple and parent-child relationships simultaneously, the two subsystems were able to be compared side-by-side. Not only did this provide

evidence that the couple relationship is a more influential pathway through which depressive symptoms negatively impact family cohesion, but this approach also captured the spill-over of couple withdrawal between the couple and parent-child relationship, which has been missed in previous studies only examining the parent-child relationship. Additionally, assessing self-report and observational data simultaneously made it possible to check for any potential self-report bias due to actors' depressive symptoms, which has consistently been identified as a methodological limitation in previous research (Gustavson et al., 2012; Lucia & Breslau, 2006). While the differing self-report and observational results may suggest that self-reporting bias could partially account for the effects, the significant partner effects confirmed that depressive symptoms affected family dynamics as perceived by both parents. Therefore, the overall pattern of results corroborates the theories and research reviewed in the Introduction that specify depressive symptoms as a vulnerability for couple and parent-child functioning and illustrate that these will play an important role in undermining family cohesion. The findings, therefore, offer important targets for reducing the impact of parents' depressive symptoms on family cohesion.

Another strength of the current research is that it expanded the current understanding of parents' depressive symptoms by including assessments of both mothers' and fathers' depressive symptoms. Previous research (Davies & Windle, 1997; Donovan et al., 1998; Hammen et al., 2004; Henderson et al., 2003; Perera et al., 2014; Tammentie et al., 2004; Weissman & Paykel, 1974; Weissman et al., 1972) and reviews (Cummings & Davies., 1994; Downey & Coyne, 1990; Galbally & Lewis, 2017; Gelfand & Teti, 1990; Goodman, 2007) have predominantly focused on mothers' depressive symptoms, resulting in a lack of knowledge about how fathers' depressive symptoms impact families, and whether this differs from how mothers' depressive symptoms impact families. To address this gap in the literature, we examined actor and partner effects for both mothers and fathers. The results

revealed that the impact of depressive symptoms on family cohesion did not differ between mothers and fathers, emphasising that fathers affected by depressive symptoms can also generate hostility and withdrawal in the family system and thus undermine family cohesion. The inclusion of fathers' depressive symptoms in this study not only expands on prior literature but emphasises the importance of increasing attention to men's mental health, which is frequently academically and societally overlooked (Mansfield et al., 2003; McKinlay et al., 2009).

Additionally, despite the inconsistent findings, the inclusion of both self-report and observational coding illustrates the importance of multiple methods in examining how depressive symptoms affect family dynamics. The reflections on the findings also have methodological implications for future investigations. In particular, in the current research, the coding of observational measures of family cohesion was generated from the empirically tested SCIFF coding manual. The SCIFF has been shown to have strong inter-rater reliability between coders (Lindahl & Malik, 2000) and has been tested across a wide range of studies, including examining the connections between family cohesion and adolescents' externalising problems (Richmond & Stocker, 2006) and marital conflict (Kitzmann, 2000), as well as children's socioemotional adjustment (Sturge-Apple et al., 2010), appraisals of threat and self-blame (Lindahl & Malik, 2011), and externalising problems (Coe et al., 2018). Furthermore, the SCIFF has been used to assess family dynamics in a diverse range of ethnic groups (Lindahl & Malik, 2000), supporting the appropriate use of the SCIFF to aid the development of the coding schedule in the current given the range of ethnicities in the sample, with participants identifying as Māori, Pacific Nations, New Zealand European/Pākehā, non-NZ European, Asian, and Indian. By using the SCIFF as the foundation to measure family cohesion, the findings from the current research connect with prior research and may have been an accurate assessment of family cohesion. Accordingly,

the lack of effects of depressive symptoms—despite the empirical and theoretical foundation and the self-report results—points to the importance of ensuring the observed family interaction provides a diagnostic context to assess hostility, withdrawal, and family cohesion (as discussed further below).

Along with the strengths of the research, several aspects of the sample may limit the generalisability of the findings. Firstly, the sample only consisted of mixed-gender, nuclear families, and thus results cannot be confidently generalised to families outside of this composition. In recent decades society has seen a rise in a wide range of familial structures outside the traditional heterosexual, nuclear families (Baker, 1999; Shea, 1982), and thus a greater understanding of the impact of parents' depressive symptoms on a diverse range of family types is warranted. This is particularly important in New Zealand context, where whānau is inclusive of the wider family; thus, it is not uncommon to have large, extended families sharing a household, with approximately one in nine children living in a multi-family household (Statistics New Zealand, 2020). To address this limitation, future research should aim to include a variety of family types, such as extended families, single-parent families, and same-sex families, to more clearly understand how parents' depressive symptoms impact families represented in the wider population.

Secondly, only triadic family interactions were observed, as having a sibling in the room created an additional child-child subsystem which went beyond the scope of the coding manuals that were designed for this research. Additionally, having extra family members present changes the nature of the family, couple, and partner-child dynamics, particularly during conflictual sibling interactions (Richmond & Stocker, 2006). Given that the majority of families have multiple children, future research would benefit from developing coding manuals that can capture wider family dynamics to allow for siblings to be included in additional observational studies. Furthermore, the findings may vary depending on how many

children are in the family, with previous research indicating that parents' depressive symptoms are exacerbated by the greater number of children in the house (Henderson et al., 2003), which can negatively impact family cohesion as more children can decrease parental availability, which is already diminished by depressive symptoms. Thus, disentangling the changing dynamics of family interactions based on the number of children parents have is an important next step in further understanding how parents' depressive symptoms impact family cohesion and subsequently developing appropriate supports and interventions for a wide range of families.

Lastly, the families in the current study came from a community sample and thus were not clinically depressed, with parents' average scores of depressive symptoms well below the threshold for being at risk for clinical depression. Additionally, participants were self-selecting, and therefore family cohesion in this sample was arguably higher in contrast to if families were randomly selected, as the nature of the study required the whole family to commit to a laboratory visit, which already requires a degree of cohesiveness. Thus, these findings cannot be generalised to a less well-adjusted population, such as those lower in cohesion and experiencing clinical depression. It may be the case that family cohesion is further reduced in this population as depressive symptoms intensify; alternatively, family cohesion may increase as families learn to adjust and accommodate the specific diagnosis of depression and become more attuned to each other's needs (Cummings & Davies, 1994). However, since the majority of participants in this sample did not report experiencing significant levels of depressive symptoms, the findings may provide greater insight into the family dynamics in the general population in which all parents are susceptible to experiencing low-level depressive symptoms from time to time (Sutin et al., 2013). Thus, these findings have indicated that even subthreshold depression can undermine family cohesion, emphasising the importance of providing parents support with fostering family

cohesion across the wider population. Nevertheless, future research should replicate the study with families in which one partner has received a clinical diagnosis. This would enable testing whether the pattern of results changes in a population involving prolonged and more severe depressive symptoms, which would be useful to know to ensure the appropriate level of support is provided for families when establishing family-level interventions to increase cohesion.

In addition to the limitations regarding the sample, the laboratory set-up may have influenced how families behave to undermine family cohesion which may have contributed to the null effects using the observational assessments. The laboratory setting may have prompted lower levels of cohesion across families irrespective of parents' depressive symptoms. The room was organised to have two chairs next to the table with toys and two chairs away from the table, which may have resulted in some parents sitting away from the family if they did not get a chair next to the table. Furthermore, many of the games provided in the study were only designed for two players, which may have further undermined family cohesion. Thus, future research should consider including additional chairs and more multi-player games when assessing family cohesion to minimise the impact of these extraneous variables on the outcome.

The context of the free-play interaction is also an important consideration for future research. The free-play setting in the current study did not reflect how cohesive families may be during more stressful interactions. Stressful interactions have been found to exacerbate depressive symptoms (Anisman & Zacharko, 1982; Pittenger & Duman, 2008), and thus it would be expected that parents' expressions of hostility and withdrawal would become heightened and subsequently have a more severe detrimental impact on family cohesion. Thus, future research could assess family cohesion directly following a stress-inducing task, such as a couples' conflict discussion, as this is a similar context in which self-reported

hostility and withdrawal were assessed, which showed promising findings. Alternatively, researchers could conduct home observations of family interactions as this would increase the ecological validity of the assessments and allow researchers to assess family cohesion in the context of typical day-to-day stresses that parents consistently face. During stressful situations, parents' depressive symptoms likely impact family cohesion the most; thus, a greater understanding these processes would be useful to inform family-level interventions. For example, gaining more clarity of these processes can help clinicians support parents who experience depressive symptoms to achieve better family outcomes by offering specific stress management strategies.

Importantly, given the novel nature of this research, replication of results is necessary to draw any strong conclusions from the findings. Additionally, the remaining direct effects between parents' depressive symptoms and family cohesion indicate there are additional variables—other than couples' hostility and withdrawal—that can help explain how depressive symptoms undermine cohesion. Variables that also may play a mediating role involve broader characteristics of the couple relationship that both contribute to and arise from hostility and withdrawal, such as relationship dissatisfaction or the intensity and frequency of couples' conflict. Moreover, previous research has consistently demonstrated that couples' conflict can exacerbate depressive symptoms (Beach, 2014; Du Rocher Schudlich et al., 2011), which might also indicate that the links between depressive symptoms, couples' hostility and withdrawal, and family cohesion are stronger in the context of couples' dissatisfaction and conflict. Furthermore, many processes may mitigate the impact of depressive symptoms on couple and partner-child hostility and withdrawal, and subsequently, family cohesion. For example, when one partner is highly responsive and supportive, this might buffer the effects of depressive symptoms on negativity in both couple and partner-child relationships (McRae et al., 2021; Pietromonaco et al., 2021), protecting or

enhancing family cohesion. Thus, the current findings and reflection offer important directions for future research, including identifying the additional factors that explain the links between depressive symptoms and family cohesion as well as the key variables that may buffer the impact of parents' depressive symptoms on family cohesion, which will help to inform intervention strategies to ameliorate the impact of parents' depressive symptoms on the family.

Finally, equifinality likely exists with family cohesion, in that there are multiple predictors of poor family cohesion, with parents' depressive symptoms being one of them. Given that this study is one of the first investigations to assess family cohesion as an outcome variable, future research could work to identify additional predictors of poor family cohesion, such as time spent together as a family or parenting styles. By identifying additional risk factors, appropriate targeted interventions can be developed for the different pathways leading to poor family cohesion, thereby improving family outcomes. Lastly, in all future developments, theoretical, empirical and intervention work must take a broader family-systems perspective to understand how all members of the family are affected by, and affect, the links between depressive symptoms (and other predictors) of family cohesion. The current research demonstrated the value of examining different subsystems in the family and the relative effects on overall family functioning. Yet, as with the literature in general, a key element that was missing was a consideration of how children contributed to, and were affected by, the couple and partner-child dynamics examined and the downstream consequences on family cohesion, which I discuss next.

Consequences and the Role of Children in Family Cohesion Processes

Children also likely play an active role in shaping family cohesion, but children's contribution to and perception of family cohesion was not assessed in the current study. Table 14 describes the ways that children's responses may intersect with the processes identified

here to undermine family cohesion, with children also exhibiting hostility and withdrawal. Firstly, the impact of parents' depressive symptoms on the couple relationship likely produces children's own hostility and withdrawal from witnessing the hostile and withdrawn exchanges between parents (indirect processes). Secondly, the impact of parents' depressive symptoms on the parent-child relationship likely produces children's own hostility and withdrawal in response to parents' direct hostility and withdrawal (direct processes). Finally, the resulting hostility and withdrawal in children is likely to both compound the effects of parent's hostility and withdrawal as well as reduce positive affect and mutual engagement between family members, thereby further diminishing overall levels of family cohesion.

With regard to indirect processes via the couple relationships (see first row, Table 14), prior research illustrates that children's exposure to couples' hostility and withdrawal undermines children's sense of emotional security (Du Rocher Schudlich & Cummings, 2007). Children may perceive hostile and withdrawn exchanges between parents as threatening and thus see their own relationship with parents as less stable (Harold et al., 2004), subsequently resulting in children's internalising behaviour (e.g. nervousness; Du Rocher Schudlich & Cummings., 2007) or externalising behaviour (e.g., aggression) to regulate emotional distress or regain a sense of emotional security (Fosco & Grych, 2008; Kouros et al., 2008). Children may also blame themselves for parents' hostile exchanges, interpreting parents' hostility to be about them or feel responsible for causing it (Lindahl & Malik, 2011), which may induce feelings of guilt and helplessness. Subsequently, children may express greater hostility, to distract from or diffuse parents' hostility, and greater withdrawal, to avoid exposure to parents' hostility (Fosco & Grych, 2008). Furthermore, children may become responsible for compensating for parents' withdrawal leading to the parentification of the child in which children withdraw from their role as a child and take on the role of a parent (DiMarzio et al., 2021). For example, children may feel compelled to

intervene and console parents following withdrawn exchanges (Peris et al., 2008), as well as feel obligated to fulfil parenting obligations, such as emotional and instrumental caretaking tasks (Champion et al., 2009). This type of parent-child role reversal causes family alliances to become unbalanced, thereby undermining cohesion.

Witnessing parents' hostile and withdrawn exchanges may also produce similar behaviour in children through the process of social learning theory (Bandura, 1969), where children observe and then imitate the hostility and withdrawal exhibited between parents. Extending social learning theory, social cognitive theory proposes that witnessing behaviours from models can also inhibit or disinhibit previously acquired socially disapproved forms of behaviour through vicarious learning (Gelfand & Teti, 1990). Thus, witnessing parents' hostile behaviour may disinhibit children's previously acquired aggressive behaviour by inadvertently giving children permission to engage in similar behaviour (Cummings et al., 1985), and consequently children may start expressing hostility towards parents. Additionally, social referencing, which relies on adults' affective displays for children to regulate behaviour (Feinman, 1982), may mean that observing parents' withdrawal instead of resolving their frustration may teach children to suppress their own feelings of frustration and subsequently withdraw from parents during conflictual interactions (Cummings & Davies, 1994).

Table 14

Summary of the Ways Couple and Parent-child Hostility and Withdrawal May Generate Children's Hostility and Withdrawal and its Impact on Cohesion

	Definition	*Hostility (increased negative interactions)*	*Withdrawal (decreased positive interactions)*	*Combined*
Indirect	A passive process whereby parents' hostility and withdrawal in the couple relationship indirectly produce children's hostility and withdrawal	• Threat to emotional security, as parents' hostile exchanges induce children's perceived threat appraisal, triggering children's own hostility • Social learning theory: children observe hostile exchanges between parents, and then imitate hostility toward parents • Social cognitive theory: witnessing parents' hostile exchanges disinhibits children's hostile behaviour	• Threat to emotional security, as parents' withdrawn exchanges induce children's perceived threat appraisal, triggering children's own withdrawal • Parentification of children • Social learning theory: children observe withdrawn exchanges between parents and then imitate withdrawal toward parents • Social referencing: children use parents' withdrawal from each other during conflicts to inform their own withdrawal from conflicts	• Threat to emotional security, as parents' hostile exchanges induce children's self-blame appraisal, triggering children's own hostility and withdrawal
Direct	An active process whereby parents' hostility and withdrawal in the parent-child relationship directly produce children's hostility and withdrawal	• Social learning theory: parents directly model hostile behaviour through parent-child hostility • Social referencing: children use parents' hostile expressions as guides • Hostile parenting is associated with children's emotion dysregulation leading to externalising problems	• Social learning theory: parents directly model withdrawn behaviour through parent-child withdrawal • Mirroring: children unconsciously reflect parents' withdrawn behaviour • Withdrawn parenting is associated with children's emotional dysregulation leading to internalising problems • Insecure attachments: children develop anxious-avoidant attachment from withdrawn parenting	• Insecure attachments: children develop disorganised attachment from inconsistent hostile and withdrawn parenting • Hostile-withdrawn pattern between parents and children

	Definition	*Hostility (increased negative interactions)*	*Withdrawal (decreased positive interactions)*	*Combined*
Cohesion	Family cohesion is made up of (1) positive affect and (2) mutual engagement	• Insecure attachments: children develop anxious-ambivalent attachment from hostile parenting • Children's hostility may reduce cohesion by reducing positive affect, characterised by decreased expressions of warmth, closeness and supportiveness	• Children's withdrawal may reduce cohesion by reducing mutual engagement, characterised by less engagement and participation by all family members, cooperation and a sense of unity and togetherness	• Amplifying the impact of children's reduced positive affect and mutual engagement

With regard to direct processes via the parent-child relationships (see second row, Table 14), social learning theory (Bandura, 1969) may also directly facilitate children learning hostile and withdrawn behaviour. Additionally, through mirroring, children may unconsciously pick up parents' hostile or withdrawn emotions and expressions (Gelfand & Teti, 1990; Whitehead, 2001). Social referencing may also mean that parents' hostility or withdrawal informs children how to regulate their own emotions and behaviour (Gelfand & Teti, 1990), resulting in children's more dysregulated, angry, externalising behaviour (Alpern & Lyons-Ruth, 1993; Hay et al., 2003; Munson et al., 2001). Alternatively, parents' emotional unavailability through withdrawal may deprive children the opportunity to develop adaptive emotion regulation skills, leaving children feeling helpless and consequently withdrawing or disengaging (Compas et al., 2002). Children also may interpret parental withdrawal as parental rejection (Shelton & Harold, 2008), contributing to children's internalising behaviour as they experience a diminished sense of self-worth (Downey & Coyne, 1990). Additionally, parents' experiencing greater depressive symptoms may hold negatively biased perceptions about their children, which children may pick up on, lowering their self-worth and exacerbating their withdrawn behaviour (Goodman et al., 1994).

Hostile and withdrawn parenting practices can also shape the development of children's insecure attachment styles, which can produce children's own greater hostility or withdrawal. Hostile parenting likely leads to children not perceiving their parents as a source of safety and security, and thus children may develop an anxious-ambivalent attachment style characterised by hostile, angry, rejective behaviours (Ainsworth, 1978). Alternatively, withdrawn parenting likely leads to children developing an internal working model of others being cold, rejecting, and unreliable, and thus children may develop an anxious-avoidant attachment style, characterised by withdrawal and excessive self-reliance (Carnelley et al., 1994; Finzi et al., 2000). Additionally, parents with greater depressive symptoms may engage

in both hostile and withdrawn parenting behaviours and practices (Gelfand & Teti, 1990; Stoneman et al., 1989; Weissman et al., 1972) which can be confusing for children while they are establishing working models of attachment relationships (Borelli et al., 2010). Consequently, inconsistent parenting likely leads to children developing a disorganised attachment style, characterised by both hostile, conflictual behaviour and withdrawn, fearful behaviour (Teti et al., 1995) as children struggle to determine whether to seek proximity or avoid their parents (Baer & Martinez, 2006).

Lastly, given the dyadic nature of parent-child relationships, parents and children may engage in a hostile-withdrawn pattern, with parents' hostility and withdrawal producing opposing behaviours in children. Frequent parental hostility may elicit greater withdrawal in children. Children may perceive hostile parents as less supportive (East, 1991), as well as experience greater feelings of distress and worthlessness (Gruhn et al., 2016), which may cause children to retreat from their parents. On the contrary, continuous parental withdrawal may evoke greater hostility in children. Children may interpret parental withdrawal as rejection, inducing physiological arousal, which can be expressed as anger (Cummings & Davies, 1994). Furthermore, children often depend on parents to initiate interactions to receive care (Lovejoy et al., 2000); thus, children may experience increased frustration at not having their needs met and subsequently engage in more tantrums and demanding behaviour to elicit parental attention (Weissman et al., 1972).

The direct and indirect processes summarised in Table 14 highlight the impact the results of the current research will have on children. These processes also highlight that future research should incorporate children's hostility and withdrawal during family interactions in theoretical and empirical examinations of the links between parents' depressive symptoms and family cohesion. Additionally, future research should consider assessing children's self-reported perceptions of family cohesion, as this may differ from

parents' reports and acknowledges children as autonomous beings with their own thoughts and experiences. The current research has highlighted how parents' depressive symptoms do not occur in a vacuum, with the negative impact extending beyond the individual into both the couple and parent-child subsystem. However, family systems theory proposes that all members of the family influence each other's behaviour, with children playing an active role in shaping overall family behaviour (Gurman & Kniskern, 2014). Thus, investigating how children are impacted by parents' depressive symptoms from their own perspective is an important next step in gaining a complete understanding of family functioning.

Conclusion

Applying a family-systems framework, the current research examined the associations between parents' depressive symptoms, couple and parent-child hostility and withdrawal, and family cohesion. The unique multi-method design allowed for both self-report and observational assessment of both couple and parent-child hostility and withdrawal as well as family cohesion. The results offer valuable novel insight into the processes that may contribute to undermining family cohesion. In particular, the results of parents' reports identified the couple relationship as the primary subsystem through which parents' depressive symptoms negatively impact family cohesion. Couple hostility and withdrawal directly mediated the links between depressive symptoms and family cohesion, but withdrawal also spilled over to predict greater parent-child withdrawal, which also undermined family cohesion. These findings help to inform targeted interventions through supporting parents to manage expressions of hostility and withdrawal within the couple relationship, thereby preventing couple dynamics from negatively impacting wider family cohesion. Additionally, the lack of associations in the observational data may suggest that the couple relationship may not undermine family cohesion under the right circumstances (e.g., non-conflictual playtime), which has important implications for the contexts in which these family processes

should be studied. Furthermore, the lack of direct associations between parents' depressive symptoms and family cohesion via the parent-child subsystem suggests that parents experiencing depressive symptoms are still capable of engaging in supportive parenting practices and fostering family cohesion, thereby challenging the commonly held assumption that parents experiencing depressive symptoms inevitably provide inadequate parenting (Downey & Coyne, 1990; Goodman, 2007; Nomura et al., 2002). This is an important first step in destigmatising parents experiencing mental illness. Thus, despite identifying depressive symptoms as a risk factor for lower family cohesion, the current findings also offer an optimistic step forward. If couples are able to strengthen their relationship with each other during conflictual interactions, parents may still be able to facilitate a cohesive home environment, even while experiencing sub-clinical depressive symptoms.

Appendix A

Coding Schedules

Family Cohesion Coding during Free Play Activity

Adapted from Lindahl, K. M., & Malik, N. M. (2000). *System for Coding Interactions and Family Functioning (SCIFF): A coding system for family problem discussions.* University of Miami.

Cohesiveness represents the sense of unity, togetherness, and closeness within a family. The degree of cohesiveness in a family involves two components: the extent to which family members (1) are affectionate, respectful, and warm toward each other, and 2) display a sense of mutual connection and coordination. Families high in cohesion appear to be comfortable, unified, and close with one another. Family members are warm, connected, mutually engaged, and function well as a family unit. Families low in cohesion display *interpersonal* distance, awkwardness, and stiffness. Family members will often appear disengaged and disconnected from one another, and don't appear to be functioning as a family unit.

1 - Very Low. At very low levels of cohesion, all the family members appear disengaged from one another; *interpersonal* distance, aloofness, stiffness, or awkwardness characterize the relationships within the family. Even if family members are physically near each other, there is little warmth or closeness during most of the interaction. Family members rarely demonstrate physical or verbal affection and/or pay little attention to each other. It is clear that family members are not working together or have difficulty connecting and functioning as a unit.

2-3 - Low. At low levels of cohesion, the family appears fragmented, rather than cohesive. There are moments when the family appears unified, but these moments are infrequent and do not characterize the interaction. This code may also be given if it appears that there is interpersonal distance, aloofness, or awkwardness in at least one or two of the dyads, but not all of three of them (e.g., mother-child dyad appears close and forms a strong alliance, but there is distance in the father-child and/or mother-father dyad). There may be brief moments when family members clearly "connect" with one another.

4 - Moderate. At moderate levels of cohesion, in each of the three dyads (mother-child, father-child, mother-father) there must be observable moments of closeness, unity, and cohesion. However, there are times when the family appears fragmented, rather than cohesive. Moments of interpersonal distance, stiffness, and/or awkwardness may be observed. The main difference between a code of low (2-3) and moderate (4) cohesion is that families scoring low in cohesion should basically appear fragmented but have moments of cohesion, whereas families scoring moderate in cohesion should basically appear to function as a unit, but the depth of the connection among family members is lacking or difficulty to ascertain.

5-6 - High. At high levels of cohesion, family members generally appear connected and are functioning well as a unit, though on rare occasions, moments of awkwardness or interpersonal distance may be observed. These difficult moments never reach a level that would be labelled fragmented. The interaction may not always be smooth, but the spirit of unity and togetherness among family members is relatively consistent. Family members will likely exhibit verbal and nonverbal displays of warm connection, such as shared laughter, joint attention, or language that references the family unit ('we', 'our'). The family members generally appear to be comfortable and close with one another, and have an underlying connection, even if they are engaging in different activities and/or are not physically near one another. Some dyads (e.g., mother-child or father-child)

might be closer and more engaged in some parts of the interaction, but such alliances shift across the family and are balanced across the interaction.

7 - Very High. At very high levels of cohesion, family members are connected and function very well together as a unit. They appear comfortable and close with one another and clearly united in the interaction. Family members remain strongly connected, are attentive toward each other, and work as a coordinated unit, even if they are engaging in different activities and/or are not physically near one another. The warmth and strength of the connection between them is obvious. The interaction likely runs very smoothly. This rating should be given if the above are true, with the understanding that interactions may not always be highly positive given the context.

NOTE: coding should be focus on whether cohesion is present rather than whether there are attempts to generate cohesion, such as inviting in a distanced family member. For such attempts to represent cohesion, they must be successful in generating the *mutual* family-level connection, warmth, engagement and coordination at the heart of *family* cohesion.

Coding of Behaviour toward Partners during Free Play Activity

These codes assess each parent's affective behaviour toward their partner within the context of a triadic family interaction. These codes integrate behaviours from the Coparenting Behaviour Coding Scales (Schoppe-Sullivan, 2007), the Communication Strategies Coding Scheme (Overall, Fletcher, Simpson & Sibley, 2009; Overall, 2018) and observational coding of responsiveness during couples' discussions (Maisel, Gable & Strachman, 2008).
The coding will focus on four categories of behaviours.

- **Warmth** reflects expressions of warmth, affection, and positive regard for the partner, and responsiveness toward partner as shown by understanding, validation, respect and caring for the partner.
- **Engagement** reflects being interested, attentive toward and engaged with the partner.
- **Hostility** reflects expressions of anger, irritation and frustration toward the partner and may involve criticism, derogation, invalidation, rejection, disagreement, condescension and/or being demanding and domineering.
- **Neglect** reflects disengagement and distancing from the partner, and may involve being closed-off, inattentive, disengaged, silent, and non-responsiveness to partners' attempts to engage.

Each of these categories of behaviour can be expressed in various ways. When rating each behaviour, coders should consider the **frequency, intensity, and duration** of the behaviours that fit within each category. More frequent, intense and continual demonstrations of the target behaviours will result in higher scores. Moderate scores may reflect very clear instances of high intensity behaviour or multiple instances of less intense behaviour. Very high scores are likely to show relatively high frequency, intensity and duration of relevant behaviours.
Consider both verbal behaviour, including verbal content, vocal tone, pitch, amplitude, and frequency, as well as non-verbal behaviour, including body position/posture, facial expressions, eye gaze, gestures and actions.

WARMTH
This code reflects the degree to which each parent expresses warmth, affection, and positive regard for their partner. Warmth may be verbally expressed by the parent saying positive things to their partner, or through nonverbal expressions, such as smiling, nodding, and expressing affection. More subtle expressions of warmth involve open body posture, turning toward the partner, and positive physical touch. Warmth also includes showing understanding or acknowledging the partner's thoughts and feelings, verbally or non-verbally expressing value and respect for the partner, and showing caring towards the partner. The parent may be supportive or encouraging toward their partner in an authentic, caring (not sarcastic or controlling) manner. The parent may demonstrate that they care about what their partner is thinking and feeling. The parent may also emphasise their relationship to their partner by referencing the relationship using words such as "we" or "our".
1 – No Warmth. No warmth is expressed towards one's partner during the interaction.
2-3 – Low Warmth. The parent is relatively restricted in their expressions of warmth toward their partner. There is a limited sense of warmth in terms of frequency or intensity toward their partner.
4 – Moderate Warmth. The parent expresses a reasonable amount of warmth towards their partner. The amount of warmth is apparent but not striking in intensity of frequency. Although warmth is expressed at times, the intensity is typically low.
5-6 – High Warmth. The parent clearly expresses warmth towards their partner. Warmth may be seen through visible expressions or inferred through the feelings that the parent demonstrates toward their partner. The warmth is strong and consistent, but not as pervasive across the interaction as represented by a score of 7.
7 – Very High Warmth. Continual expressions of warmth towards the partner fill the interaction. If coders see explicit expressions of physical affection a 7 should be considered.

ENGAGEMENT

This code reflects the degree to which the parent is interested, attentive toward and engaged with their partner. Verbal indicators of engagement include actively initiating interactions/conversations with the partner, expressing interest in what the partner is thinking and doing, and seeking the partner's thoughts or inviting the partner to engage in joint or family activities. Engagement can also be displayed through nonverbal expressions, such as moving toward the partner or touching base via eye contact, even if the parent is just watching the partner play with their child. If not physically close to their partner, the parent can still demonstrate engagement and interest by attentive tracking of the partner's actions, asking the partner questions, or commenting on the parent's play with their child.

1 – No Engagement. Parent displays no interest in what the partner is doing.

2-3 – Low Engagement. The parent is somewhat engaged and interested in what their partner is doing. There is a limited sense of engagement in terms of frequency and intensity of attention or interest directed toward the partner. There may be a sense that the parent is not "fully present" or interested when interacting with the partner.

4 – Moderate Engagement. There are clear signs of engagement and interest towards the partner. The amount of engagement is apparent, but not striking in intensity or frequency. Although interest is expressed at times, the intensity is typically low, and there may be only a few attempts to actively engage the partner in interaction.

5-6 – High Engagement. The parent is clearly engaged and interested in what the partner is thinking and doing. The parent's interest and engagement are strong and consistent, but not as pervasive across the interaction as represented by a score of 7.

7 – Very High Engagement. Continual engagement and interest toward the partner throughout the interaction. The amount of interaction with the partner is usually high and continually reflects an interest in the partner.

HOSTILITY

This code reflects the degree to which each parent expresses hostility towards their partner. Hostility includes the use of criticism, insults, expressions of irritation and/or frustration, blaming, ridiculing, or putting their partner down. Any expression that clearly conveys hostile negative affect (anger, irritations), poor regard (criticizing, putting down), and rejection of the partner's thoughts, actions and contributions to the interactions. Hostility is expressed in any action that invalidates the partner, including being patronizing or condescending or rejecting and denying the validity of their partner's thoughts or actions, either directly to the partner or indirectly in their actions and statements to the child. Hostility can also manifest as being domineering and insisting or demanding the partner think or respond in particular ways, such as commanding partners to do tasks/actions during the family activity.

1 – No Hostility. No hostility is expressed towards the partner during the interaction.

2-3 – Low Hostility. Some mild hostility is seen. The parent may express frustration, irritation, criticism or invalidation, but these are infrequent or momentary and the parent recovers easily and returns quickly to interactions characterised with no irritation or negative affect toward the partner. Clear hostility may appear once or twice, or the interaction may reflect a few vague instances that are low in intensity across the interaction.

4 – Moderate Hostility. Irritation, criticism and invalidation is clear and may be demonstrated in a variety of ways. Expressions of hostility last for more than just a moment or recur at several points during the interaction. At least one clear instance of hostility.

5-6 – High Hostility. Clear hostility toward the partner. Negativity toward the partner is relatively intense, and the parent has difficulty letting go of hostility as the interaction unfolds. At least one clear instance of hostility among other mild instances that occur frequently across the interaction.

7 – Very High Hostility. Repeated or continuous expression of hostility towards the partner. The parent is clearly intensely frustrated, irritated or otherwise upset with their partner. There may be one or two intense instances of hostility or, more typically, several verbal or nonverbal hostile displays that are relatively frequent.

NEGLECT

This code reflects the degree to which each parent exhibits neglect and disengagement from their partner. Neglect behaviours include a passive and dismissing stance toward the partner. Neglect behaviours include: being distant, aloof and closed-off towards the partner; avoiding engaging with the partner by hesitating or diverting attention; displaying muted or no communication towards the partner; and generally showing a lack of attention or ignoring the partner, including being non-responsive to the partner's attempts to engage them in interaction. Higher levels of neglect involve actively dismissing the partner's responses; disengaging from the partner, as evident by reducing eye contact, closed off body posture, and creating physical distance; and withdrawing from the partner.

1 – No Neglect. The parent does not exhibit any neglect or withdrawal during the interaction.

2-3 – Low Neglect. Some neglect is visible. A slight amount of distance towards their partner is visible, including showing disinterest, diverted attention, and non-responsiveness. The parent may be generally open to their partner's attempts to engage without necessarily initiating communication themselves. If you are unsure but there seems to be behaviour indicating neglect provide a score of 2.

4 – Moderate Neglect/Withdrawal. Neglect and withdrawal are evident. The parent generally keeps to themselves during much of the interaction. The parent tends to ignore or dismiss their partner. The parent may not respond to what their partner says or shifts attention when engaged but offers no actual response.

5-6 – High Neglect/Withdrawal. High amounts of neglect and withdrawal that is relatively consistent across the interaction. The parent directs little or no attention toward the partner and the interaction is characterised by disengagement. Physical distancing and withdrawal are likely to be apparent. The parent may at times respond to their partner, but in a distant fashion, and often ignores or rejects their partner's attempts to engage.

7 – Very High Withdrawal. Neglect dominates the interaction and appears to be intentional. The parent continually appears disinterested in and disengaged from their partner. The parent actively withdrawals. The parent does not respond to their partner and may respond to attempts to engage with disdain.

NOTE: Attention toward the child does not necessarily indicate neglect of the partner. It may often be the case that parents are focused on their child without disengaging or ignoring their partner, and attention/focus may naturally shift across the different dyads. However, neglect will be present if parents continually ignore the partner, dismiss partners' attempts to engage, or purposefully direct attention toward the child to invalidate, rejection or dismiss their partner.

Coding of Behaviour toward Child during Free Play Activity

These codes assess each parent's affective behaviour toward their child within the context of a triadic family interaction. These codes have been adapted from the emotional availability scales (Biringen, Robinson & Emde, 2000), the coding schedule from Landry, Smith, Swank and Guttentag (2008) and the Parental Responsiveness Coding Scheme (Low, Henderson & Overall, 2017) for assessing parental responsiveness during family interactions.
The coding will focus on five categories of behaviours:

- **Warmth** reflects expressions of warmth, affection, and positive regard for the child.
- **Engagement** reflects being interested, attentive toward and engaged with the child.
- **Responsiveness** reflects sensitivity, contingent responding, and support for autonomy
- **Hostility** reflects expressions of anger, irritation and frustration toward the child and may involve criticism, condescension and/or being demanding and domineering/intrusive.
- **Neglect/Withdrawal** reflects disengagement and distancing from the child, and may involve being closed-off, inattentive, disengaged, silent, and non-responsiveness to their child's attempts to engage.

Each of these categories of behaviours can be expressed in various ways. When rating each behaviour, coders should consider the **frequency, intensity, and duration** of the behaviours that fit within each category. More frequent, intense and continual demonstrations of the target behaviours will result in higher scores. Moderate scores may reflect very clear instances of high intensity behaviour or multiple instances of less intense behaviour. Very high scores are likely to show relatively high frequency, intensity and duration of relevant behaviours.
Consider both **verbal behaviour**, including verbal content, vocal tone, pitch, amplitude, and frequency, as well as **non-verbal behaviour**, including body position/posture, facial expressions, eye gaze, gestures and actions.

WARMTH
This code captures the degree to which the parent expresses warmth, affection and positive regard for their child. Warmth may be verbally expressed by the parent saying positive things to their child, such as compliments, praise or expressions of caring. Nonverbal expressions may include positive facial expressions, smiling, laughing, and affectionate touch. Physical affection may include expression of care and comfort, such as a hug or kiss on the cheek. Or, physical affection could be expressed more playfully, such as giving the child a high-five. More subtle expressions of warmth and affection involve open body posture and turning toward the child. The parent may be supportive toward their child by encouraging them, building positivity or expressing praise, but not in an intrusive or controlling way. The parent may also emphasise their relationship with their child by using words such as "we" or "our".
1 – No Warmth. The parent does not display any warmth or affection toward the child.
2-3 – Low Warmth. The parent is relatively restricted in their expressions of warmth and affection toward the child. There is a limited sense of warmth in terms of frequency and intensity toward the child.
4 – Moderate Warmth. There are clear signs of warmth and affection towards the child. The amount of warmth is apparent but not striking in intensity or frequency**.** Although warmth is expressed at times, the intensity is typically low.
5-6 – High Warmth. The parent clearly expresses warmth and affection towards their child. Warmth may be seen through physical affection and/or positive verbal statements toward the child. The warmth is strong and consistent, but not as pervasive across in the interaction as represented by a score of 7.
7 – Very High Warmth. Continual expressions of warmth towards the child fill the interaction, including verbal expressions of care along with physical affection.

ENGAGEMENT

This code reflects the degree to which each parent is interested, attentive toward and engaged with their child. Engagement may be verbally expressed by the parent saying things that demonstrates interest in what the child is doing, and actively initiating interactions/conversations with the child, and inviting the child to engage in joint or family activities. Engagement can also be displayed through nonverbal expressions, such as watching the child play, sitting close to the child, and playing with the child. If the parent and child are not physically close, the parent can still demonstrate engagement and interest by attentive tracking of what the child is doing, asking the child what s/he is doing, or commenting on the child's play.

1 – No Engagement. Parent displays no interest in what the child is doing.

2-3 – Low Engagement. The parent is somewhat engaged and interested in what the child is doing. There is a limited sense of engagement in terms of frequency and intensity of attention or interest directed toward the child. There are limited attempts of initiating engagement with the child. There may be a sense that the parent is not "fully present" or focused on the child.

4 – Moderate Engagement. There are clear signs of engagement and interest from the parent towards the child. The amount of engagement is apparent, but not striking in intensity or frequency. Although interest is expressed at times, the intensity is typically low, and there may only be a few attempts to actively engage the child in interaction.

5-6 – High Engagement. The parent is clearly engaged and interested in what the child is doing. The parent's interest and engagement are strong and consistent, but not as pervasive across the interaction as represented by a score of 7.

7 – Very High Engagement. Continual engagement and interest toward the child throughout the interaction. The amount of interaction is usually high and continually reflects an interest in the child.

CONTINGENT RESPONSIVENESS

This code captures the degree to which each parent is responsive toward their child in a way that is contingent to the child's cues/needs. The parent accurately reads the child's signals, even subtle ones. The parent has a good sense of timing, is flexible and adaptable according to the demands and bids of the child. The parent is able to respond promptly to the child and follows the child's lead by building on the child's focus of attention and respecting their autonomy. The parent appears to be genuine and authentic. *NOTE: It is important to distinguish responsiveness from intrusive responding, in which, rather than being contingent to the child's needs, the parent's responses interfere with the child's activities, pressures the child, or pushes to have more input into the child's activities than is invited or needed. Parents who display intrusiveness will get a low score on this code.*

1 – No Responsiveness. The parent is not sensitive to the child's cues and lacks responsiveness.

2-3 – Low Responsiveness. The parent is somewhat responsive to the child, but their timing is delayed or out of sync with the child. The parent does not typically respond to the child's lead. Rather, the parent may display authority by instructing or directing the child's activities and behaviour.

4 – Moderate Responsiveness. The parent is reasonably responsive towards their child. The amount of responsiveness is clear and apparent but not striking in terms of intensity or frequency. Although the parent is responsive, at times, the parent may seem slow to respond or does not always follow the child's lead.

5-6 – High Responsiveness. The parent is clearly responsive and sensitive to the child's needs. The parent responds to the child promptly and is able to flexibly shift their attention. The parent typically balances responsiveness with encouraging child's autonomy.

7 – Very High Responsiveness. The parent is very responsive and sensitive to the child's needs. The parent always responds promptly and is flexible to meet the child's demands and bids for attention. The parent encourages the child's ideas and respects their autonomy.

NOTE: If the child notices or pays attention to the locked box, parents may try to distract the child by asking the child to engage in another activity. This should not be considered as a lack of responsiveness.

HOSTILITY

This code reflects the degree to which the parent displays hostility and irritation towards the child. Hostile behaviours include expressions of negative affect toward the child, such as irritation, frustration, anger, disgust, boredom or impatience. Verbal indicators may include a raised or sharp voice, snapping at the child, or a voice tone that expresses dissatisfaction with or negative evaluations of the child. The parent may also invalidate, reject, or express negative evaluations of the child by being critical, patronizing or sarcastic, or expressing that the child's action, thoughts or feelings are wrong in some way. Hostility can also manifest as insisting or demanding the child respond in particular ways, such as commanding the child to do tasks/actions during the free play or pushing the child to do something they do not want to do.

1 – No Hostility. No hostility is expressed towards the child during the interaction.

2-3 – Low Hostility. The parent displays slight or small amounts of hostility towards the child. The parent may express frustration, irritation, or impatience, but these are infrequent or momentary and the parent recovers easily and returns quickly to interactions characterised with no irritation or negative affect toward the child.

4 – Moderate Hostility. Negative affect (irritation, impatience, boredom) toward the child is clear. Expressions of hostility last for more than a moment or recur at several points during the interaction. At least one clear instance of hostility.

5-6 – High Hostility. The parent shows clear signs of negative affect towards the child. The parent may also be easily irritated by the child or manage the interaction by controlling the child.

7 – Very High Hostility. The parent is overtly harsh, abrasive and demeaning to the child. The parent is very easily irritated by the child and may snap at them.

NEGLECT

This code reflects the degree to which each parent exhibits neglect and disengagement from their child. Neglect behaviours include a passive and dismissing stance toward the child. Neglect behaviours include: being distant, aloof and closed-off towards the child; avoiding engaging with the child by hesitating or diverting attention; displaying muted or no communication towards the child; and generally showing a lack of attention or interest, or ignoring the child, including being non-responsive to the child's attempts to engage them in interaction. Higher levels of neglect involve actively dismissing the child's responses; disengaging from the child, as evident by reducing eye contact, closed off body posture, and creating physical distance; and withdrawing from the child.

1 – No Neglect. The parent does not exhibit any neglect or withdrawal toward the child during the interaction.

2-3 – Low Neglect. Some neglect is visible. The parent may be generally open to their child's attempts to engage without necessarily initiating communication themselves. A slight amount of distance toward their child is visible, including showing disinterest, diverted attention, and non-responsiveness.

4 – Moderate Neglect/Withdrawal. Neglect and withdrawal are evident. The parent's attention and engagement may be on the partner or directed toward their own activity in ways that neglect the child. Alternatively, the parent may generally keep to themselves during much of the interaction. The parent may not respond to what their child says or shifts attention when engaged but offers no actual response. The parent tends to ignore or dismiss their child's attempts to engage.

5-6 – High Neglect/Withdrawal. High amounts of neglect and withdrawal that is relatively consistent across the interaction. The parent directs little or no attention toward the child and the interaction with the child is characterised by disengagement. The parent may at times respond to their child, but in a distant fashion, and often ignores or rejects their child's attempts to engage or bids for attention. Physical distancing and withdrawal are likely to be apparent.

7 – Very High Withdrawal. Neglect and withdrawal dominate the interaction and appears to be intentional. The parent continually appears disinterested in and disengaged from their child. The parent does not respond to their child and may respond to attempts to engage with disdain. The parent actively withdraws.

NOTE: Attention toward the other parent does not necessarily indicate neglect of the child. It may often be the case that parents engage with their partner without disengaging or ignoring their child, and attention/focus may naturally shift across the different dyads. However, neglect will be present if parents continually ignore the child and dismiss child's attempts to engage.

Appendix B

Results of Hostility Controlling for Withdrawal and Withdrawal Controlling for Hostility

Table B1

Standardized Coefficients for all Self-reported Hostility Paths Specified when Controlling for Self-reported Withdrawal

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → Couple hostility										
Depressive symptoms → actors' couple hostility	.134***	.055	.213	3.315	<.001	.137***	.056	.218	3.307	<.001
Depressive symptoms → partners' couple hostility	.103*	.018	.188	2.376	.017	.091*	.015	.166	2.349	.019
Couple hostility → Family cohesion										
Couple hostility → actors' family cohesion	-.161***	-.242	-.081	-3.911	<.001	-.141***	-.212	-.070	-3.893	<.001
Couple hostility → partners' family cohesion	-.123**	-.200	-.046	-3.136	.002	-.121**	-.197	-.046	-3.149	.002
Depressive symptoms → Parent-child hostility										
Depressive symptoms → actors' parent-child hostility	.192***	.115	.270	4.878	<.001	.185***	.110	.260	4.831	<.001
Depressive symptoms → partners' parent-child hostility	.017	-.062	.096	.428	.669	.016	-.058	.090	.429	.668
Parent-child hostility → Family cohesion										
Parent-child hostility → actors' family cohesion	.049	-.034	.132	1.156	.248	.046	-.031	.122	1.163	.245
Parent-child hostility → partners' family cohesion	.094*	.017	.172	2.386	.017	.099*	.018	.179	2.393	.017

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Spill-over of Couple hostility → Parent-child hostility										
Couple hostility → actors' parent-child hostility	.259***	.182	.337	6.548	<.001	.244***	.173	.316	6.692	<.001
Couple hostility → partners' parent-child hostility	.044	-.034	.121	1.104	.270	.040	-.031	.110	1.105	.269
Depressive symptoms → family cohesion										
Depressive symptoms → actors' family cohesion	-2.68***	-.344	-.192	-6.899	<.001	-.240***	-.309	-.170	-6.761	<.001
Depressive symptoms → partners' family cohesion	-.038	-.111	.035	-1.031	.303	-.039	-.112	.035	-1.034	.301

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

Table B2

Indirect Effects Assessing the Mediation Pathways Between Self-Reported Depressive Symptoms, Couple and Parent-child Hostility, and Family Cohesion (controlling for Withdrawal)

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Mediating Role of Couple Hostility										
Depressive symptoms → actors' couple hostility → actors' family cohesion	-.022*	-.038	-.005	-2.545	.011	-.019	-.034	-.004	-2.535	.011
Depressive symptoms → partners' couple hostility → actors' family cohesion	**-.012**	**-.025**	**.000**	**-1.897**	**.058**	**-.011**	**-.023**	**.000**	**-1.893**	**.058**
Depressive symptoms → actors' couple hostility → partners' family cohesion	-.017*	-.031	-.002	-2.285	.022	-.017*	-.031	-.002	-2.292	.022
Depressive symptoms → partners' couple hostility → partners' family cohesion	-.015*	-.029	.000	-2.025	.043	-.015*	-.029	.000	-2.029	.042
Mediating Role of Parent-child Hostility										
Depressive symptoms → actors' parent-child hostility → actors' family cohesion	.009	-.007	.026	1.125	.261	.008	-.006	.023	1.131	.258
Depressive symptoms → partners' parent-child hostility → actors' family cohesion	.002	-.006	.010	.421	.674	.002	-.006	.009	.421	.674
Depressive symptoms → actors' parent-child hostility → partners' family cohesion	**.018***	**.002**	**.035**	**2.138**	**.033**	**.018***	**.002**	**.035**	**2.143**	**.032**
Depressive symptoms → partners' parent-child hostility → partners' family cohesion	.001	-.003	.005	.401	.688	.001	-.003	.005	.401	.688
Mediating Role of Spill-over of Couple Hostility										
Depressive symptoms → actors' couple hostility → actors' parent-child hostility → actors' family cohesion	.002	-.001	.005	1.078	.281	.002	-.001	.004	1.084	.279
Depressive symptoms → actors' couple hostility → actors' parent-child hostility → partners' family cohesion	.003	.000	.007	1.861	.063	.003	.000	.007	1.866	.062

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → actors' couple hostility → partners' parent-child hostility → actors' family cohesion	.001	-.001	.002	.957	.338	.001	-.001	.002	.957	.339
Depressive symptoms → actors' couple hostility → partners' parent-child hostility → partners' family cohesion	.000	.000	.001	.777	.437	.000	.000	.001	.775	.438
Depressive symptoms → partners' couple hostility → actors' parent-child hostility → actors' family cohesion	.000	.000	.001	.755	.450	.000	.000	.001	.757	.449
Depressive symptoms → partners' couple hostility → actors' parent-child hostility → partners' family cohesion	.000	.000	.001	.920	.358	.000	.000	.001	.921	.357
Depressive symptoms → partners' couple hostility → partners' parent-child hostility → actors' family cohesion	.002	.000	.005	1.633	.102	.002	.000	.005	1.630	.103
Depressive symptoms → partners' couple hostility → partners' parent-child hostility → partners' family cohesion	.001	-.001	.003	1.031	.302	.001	-.001	.003	1.027	.305

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Rows highlighted in bold indicate a change in results from the corresponding Table 5.

Table B3

Standardized Coefficients for all Self-reported Withdrawal Paths Specified when Controlling for Self-reported Hostility

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → Couple withdrawal										
Depressive symptoms → actors' withdrawal	.262***	.184	.340	6.610	<.001	.272***	.190	.355	6.482	<.001
Depressive symptoms → partners' withdrawal	.106*	.020	.191	2.412	.016	.092*	.017	.166	2.418	.016
Couple withdrawal → Family cohesion										
Couple Withdrawal → actors' family cohesion	-.146**	-.230	-.061	-3.367	.001	-.125**	-.199	-.052	-3.350	.001
Couple Withdrawal → partners' family cohesion	-.095*	-.176	-.014	-2.295	.022	-.092*	-.171	-.013	-2.289	.022
Depressive symptoms → Parent-child withdrawal										
Depressive symptoms → actors' parent-child withdrawal	.054	-.033	.142	1.222	.222	.047	-.029	.124	1.222	.222
Depressive symptoms → partners' parent-child withdrawal	.018	-.063	.099	0.436	.663	.019	-.065	.102	.437	.662
Parent-child withdrawal → Family cohesion										
Parent-child withdrawal → actors' family cohesion	-.220***	-.294	-.146	-5.800	<.001	-.226***	-.301	-.150	-5.860	<.001
Parent-child withdrawal → partners' family cohesion	.012	-.057	.081	.340	.734	.014	-.066	.093	.340	.734
Spill-over of Couple withdrawal → Parent-child withdrawal										
Couple withdrawal → actors' parent-child withdrawal	.262***	.175	.349	5.883	<.001	.202***	.144	.295	5.698	<.001
Couple withdrawal → partners' parent-child withdrawal	.086*	.004	.168	2.059	.040	.085*	.005	.166	2.075	.038

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → family cohesion										
Depressive symptoms → actors' family cohesion	-2.68***	-.344	-.192	-6.899	<.001	-.240***	-.309	-.170	-6.761	<.001
Depressive symptoms → partners' family cohesion	-.038	-.111	.035	-1.031	.303	-.039	-.112	.035	-1.034	.301

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

Table B4

Indirect Effects Assessing the Mediation Pathways Between Self-Reported Depressive Symptoms, Couple and Parent-child Withdrawal, and Family Cohesion (Controlling for Hostility)

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Mediating Role of Couple Withdrawal										
Depressive symptoms → actors' couple withdrawal → actors' family cohesion	-.038**	-.063	-.013	-3.011	.003	-.034**	-.057	-.012	-2.994	.003
Depressive symptoms → partners' couple withdrawal → actors' family cohesion	-.010	-.021	.002	-1.668	.095	-.009	-.019	.002	-1.670	.095
Depressive symptoms → actors' couple withdrawal → partners' family cohesion	-.025*	-.047	-.002	-2.169	.030	-.025*	-.048	-.002	-2.165	.030
Depressive symptoms → partners' couple withdrawal → partners' family cohesion	-.013*	-.026	.000	-1.967	.049	-.013*	-.027	.000	-1.972	.049
Mediating Role of Parent-child Withdrawal										
Depressive symptoms → actors' parent-child withdrawal → actors' family cohesion	-.012	-.032	.008	-1.198	.231	-.011	-.028	.007	-1.198	.231
Depressive symptoms → partners' parent-child withdrawal → actors' family cohesion	.000	-.002	.002	.268	.789	.000	-.001	.002	.268	.789
Depressive symptoms → actors' parent-child withdrawal → partners' family cohesion	.001	-.003	.005	.327	.743	.001	-.003	.005	.328	.743
Depressive symptoms → partners' parent-child withdrawal → partners' family cohesion	-.004	-.022	.014	-.435	.663	-.004	-.023	.014	-.435	.663
Mediating Role of Spill-over of Couple Withdrawal										
Depressive symptoms → actors' couple withdrawal → actors' parent-child withdrawal → actors' family cohesion	-.015***	-.024	-.007	-3.518	<.001	-.014***	-.021	-.006	-3.519	<.001

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → actors' couple withdrawal → actors' parent-child withdrawal → partners' family cohesion	.001	-.004	.006	.339	.735	.001	-.004	.006	.339	.735
Depressive symptoms → actors' couple withdrawal → partners' parent-child withdrawal → actors' family cohesion	.000	-.002	.002	.335	.737	.000	-.001	.002	.335	.738
Depressive symptoms → actors' couple withdrawal → partners' parent-child withdrawal → partners' family cohesion	-.005	-.010	.000	-1.871	.061	-.005	-.010	.000	-1.870	.061
Depressive symptoms → partners' couple withdrawal → actors' parent-child withdrawal → actors' family cohesion	-.002	-.005	.001	-1.521	.128	-.002	-.004	.001	-1.521	.128
Depressive symptoms → partners' couple withdrawal → actors' parent-child withdrawal → partners' family cohesion	.000	-.001	.001	.332	.740	.000	-.001	.001	.333	.739
Depressive symptoms → partners' couple withdrawal → partners' parent-child withdrawal → actor' family cohesion	.000	-.002	.002	.336	.737	.000	-.001	.002	.336	.737
Depressive symptoms → partners' couple withdrawal → partners' parent-child withdrawal → partners' family cohesion	-.005*	-.010	.000	-2.096	.036	-.005*	-.010	.000	-2.096	.036

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

Table B5

Standardized Coefficients for all Observed Hostility Paths Specified when Controlling for Observed Withdrawal

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → Couple hostility										
Depressive symptoms → actors' hostility	-.003	-.074	.067	-.093	.926	-.005	-.105	.095	-.093	.926
Depressive symptoms → partners' hostility	.071	-.035	.177	1.315	.188	.045	-.023	.113	1.308	.191
Couple hostility → Family cohesion										
Couple hostility → family cohesion	**.026**	**-.035**	**.086**	**.835**	**.404**	**.017**	**-.023**	**.058**	**.835**	**.404**
Depressive symptoms → Parent-child hostility										
Depressive symptoms → actors' parent-child hostility	.082**	.021	.144	2.619	.009	.133**	.035	.231	2.659	.008
Depressive symptoms → partners' parent-child hostility	.064	-.041	.170	1.194	.232	.036	-.023	.095	1.197	.231
Parent-child hostility → Family cohesion										
Parent-child hostility → family cohesion	-.046	-.103	.011	-1.591	.112	-.027	-.060	-.006	-1.591	.112
Spill-over of Couple hostility → Parent-child hostility										
Couples' hostility → actors' parent-child hostility	.157	-.055	.369	1.455	.146	.179	-.059	.418	1.472	.141
Couples' hostility → partners' parent-child hostility	.005	-.119	.128	.074	.941	.002	-.047	.051	.074	.941
Depressive symptoms → family cohesion										
Depressive symptoms → family cohesion	-.007	-.058	.044	-.260	.795	-.006	-.055	.042	-.260	.795

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Rows highlighted in bold indicate a change in results from the corresponding Table 8.

Table B6

Indirect Effects Assessing the Mediation Pathways Between Depressive Symptoms, Observed Couple and Parent-child Hostility, and Observed Family Cohesion (controlling for Withdrawal)

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Mediating Role of Couple Hostility										
Depressive symptoms → actors' couple hostility → family cohesion	.000	-.002	.002	-.093	.926	.000	-.002	.002	-.093	.926
Depressive symptoms → partners' couple hostility → family cohesion	.001	-.002	.005	.702	.483	.001	-.002	.004	.702	.483
Mediating Role of Parent-child Hostility										
Depressive symptoms → actors' parent-child hostility → family cohesion	-.004	-.009	.002	-1.361	.173	-.004	-.009	.002	-1.361	.173
Depressive symptoms → partners' parent-child hostility → family cohesion	-.002	-.005	.002	-.954	.340	-.002	-.005	.002	-.954	.340
Mediating Role of Spill-over of Couple Hostility										
Depressive symptoms → actors' couple hostility → actors' parent-child hostility → family cohesion	.000	.000	.001	.093	.926	.000	.000	.001	.093	.926
Depressive symptoms → actors' couple hostility → partners' parent-child hostility → family cohesion	.000	.000	.000	.057	.954	.000	.000	.000	.057	.954
Depressive symptoms → partners' couple hostility → actors' parent-child hostility → family cohesion	.000	.000	.000	-.074	.941	.000	.000	.000	-.074	.941
Depressive symptoms → partners' couple hostility → partners' parent-child hostility → family cohesion	.000	-.001	.000	-.831	.406	.000	-.001	.000	-.831	.406

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

Table B7

Standardized Coefficients for all Observed Withdrawal Paths Specified when Controlling for Observed Hostility

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Depressive symptoms → Couple withdrawal										
Depressive symptoms → actors' withdrawal	-.006	-.103	.092	-.113	.910	-.004	-.081	.072	-.113	.910
Depressive symptoms → partners' withdrawal	.005	-.075	.086	.131	.896	.006	-.086	.098	.131	.896
Couple withdrawal → Family cohesion										
Couples' withdrawal → family cohesion	-.175***	-.227	-.124	-6.692	<.001	-.211***	-.273	-.150	-6.729	<.001
Depressive symptoms → Parent-child withdrawal										
Depressive symptoms → actors' parent-child withdrawal	.019	-.052	.090	.525	.599	.017	-.046	.079	.527	.598
Depressive symptoms → partners' parent-child withdrawal	-.040	-.105	.026	-1.182	.237	-.041	-.108	.027	-1.181	.238
Parent-child withdrawal → Family cohesion										
Parent-child withdrawal → family cohesion	-.356***	-.410	-.302	-12.930	<.001	-.383***	-.440	-.327	-13.346	<.001
Spill-over of Couple withdrawal → Parent-child withdrawal										
Couple withdrawal → actors' parent-child withdrawal	**.584*** **	**.422**	**.746**	**7.063**	**<.001**	**.653*** **	**.466**	**.840**	**6.861**	**<.001**
Couple withdrawal → partners' parent-child withdrawal	**-.100***	**-.176**	**-.024**	**-2.575**	**.010**	**-.130***	**-.228**	**-.032**	**-2.591**	**.010**
Depressive symptoms → family cohesion										
Depressive symptoms → family cohesion	-.007	-.058	.044	-.260	.795	-.006	-.055	.042	-.260	.795

Note. * $p < .05$. ** $p < .01$. *** $p < .001$. Rows highlighted in bold indicate a change in results from the corresponding Table 10.

Table B8

Indirect Effects Assessing the Mediation Pathways Between Depressive Symptoms, Observed Couple and Parent-child Withdrawal, and Observed Family Cohesion (controlling for Hostility)

	Women					Men				
		95% CI					95% CI			
Path	*β*	Low	High	*z*	*p*	*β*	Low	High	*z*	*p*
Mediating Role of Couple Withdrawal										
Depressive symptoms → actors' couple withdrawal → family cohesion	.001	-.016	.018	.113	.910	.001	-.015	.017	.113	.910
Depressive symptoms → partners' couple withdrawal → family cohesion	-.001	-.018	.016	-.131	.896	-.001	-.017	.015	-.131	.896
Mediating Role of Parent-child Withdrawal										
Depressive symptoms → actors' parent-child withdrawal → family cohesion	-.007	-.032	.019	-.526	.599	-.006	-.030	.018	-.526	.599
Depressive symptoms → partners' parent-child withdrawal → family cohesion	.015	-.010	.040	1.177	.239	.014	-.010	.038	1.177	.239
Mediating Role of Spill-over of Couple Withdrawal										
Depressive symptoms → actors' couple withdrawal → actors' parent-child withdrawal → family cohesion	.001	-.019	.021	.113	.910	.001	-.018	.020	.113	.910
Depressive symptoms → actors' couple withdrawal → partners' parent-child withdrawal → family cohesion	.000	-.004	.004	-.112	.910	.000	-.004	.003	-.112	.910
Depressive symptoms → partners' couple withdrawal → actors' parent-child withdrawal → family cohesion	.000	-.003	.004	.130	.896	.000	-.003	.004	.130	.896
Depressive symptoms → partners' couple withdrawal → partners' parent-child withdrawal → family cohesion	-.001	-.021	.019	-.131	.896	-.001	-.020	.018	-.131	.896

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

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