

# From parents to children and back again: Bidirectional processes in the transmission and development of depression and anxiety

Anxiety and depression both emerge over the course of childhood and adolescence, impacting long-term functioning for both individuals and their families (Beesdo-Baum & Knappe, 2012; Essau et al., 1999). Research points to three main pathways for intergenerational transmission, including genetic inheritance, fetal programming through maternal experiences during pregnancy, and the active and passive socialization of emotion through parental behaviors (Perlman et al., 2021 under review). The last 20 years have seen an emergence of studies examining patterns of risk transmission for mood disorders from parent to child. For example, prolonged exposure to parental anxiety has been associated with increased depression and anxiety in offspring (Borelli et al., 2015). Anxious parents also have distinct parenting profiles that impact socioemotional development (Buss & Kiel, 2011), and these parenting effects may result in broad alterations to the biological and cognitive profiles of their children (Maag et al., 2021).

Much of this work has started from the necessary, but relatively limited, starting point of transmission from parent or caregiver to child. The focus is on the unidirectional downstream consequences of parental traits and behaviors. However, as with most developmental and clinical mechanisms, we quickly note that causal relations are rarely static or noncontingent (Aktar & Bögels, 2017). Rather, these mechanisms are active agents interacting with the environment, both influencing and being influenced by dynamic relations. Here, the focus is on one specific dynamic—and *potentially* bidirectional—relation in the well-known association between parental socioemotional functioning and child outcomes (Brooker et al., 2015).

This special section has a specific emphasis on studies that work to capture inflection points in developmental pathways of disorder or risk for disorder. Parental traits shape the environments in which children live, and children respond accordingly with predictable cognitive, affective, and behavioral profiles. There is emerging data suggesting that these child profiles loop back to impact parental levels of anxiety and depression, creating a bidirectional cycle. Child responses, as such, provide a trigger point for shifts in parental behaviors and traits. However, there has yet to be a systematic gathering of studies examining these pathways in one place.

In framing this special issue, our goal was to emphasize the importance of looking for bidirectional patterns, even when they are not eventually born out in the data. That is, acknowledging the bidirectional relations often inherent in theory must lead us to empirically

testing for these relations. The subsequent findings, whether positive or negative, allow researchers to then circle back to refine, reinforce, or revise guiding principles. Thus, in this special issue, we present 10 empirical papers that examine bidirectional relations in parent and child anxiety and depression symptoms. Across the studies, the authors present possible mechanisms and individual differences that may underlie the development of these important relations over time. As expected, some of the papers find evidence for bidirectional relations while others do not. However, across all 10 papers, we see several important themes.

First, caregiver anxiety symptoms do indeed predict child anxiety symptoms over time. For example, Cioffi et al. (2021) report that both mothers' and fathers' depressive symptoms in infancy predicted child internalizing symptoms in toddlerhood. Similarly, Level and colleagues (Level et al., 2021) report that increased maternal depression was concurrently associated with lower maternal sensitivity at 2-months and lower child engagement at 16-months. This relation extends well into the second decade of life. Hastings et al. (2021), for example, found that maternal internalizing pathology predicted worsening youth anxiety and depressive problems over the course of adolescence. These trait-level relations are likely carried by the behaviors that parents display in their daily interactions with children. For example, Johnco et al. (2021) not only found that parental anxiety was associated with increases in child anxiety and depression in 11-year-olds, but also that parental rejection and low warmth were associated with increases in child depression. In addition, the impact of parental traits goes beyond a one-to-one relation between symptom classes. For example, Felton et al. (2021) found that maternal depression symptoms impacted adolescent depression, via its impact on adolescent emotion regulation abilities.

Second, child anxiety symptoms are also prospectively related to caregiver symptoms in many, but not all, of the featured studies. Overall, the studies show that our constructs of interest are rarely stable over time. For example, Hunter et al. (2021) noted increases in intrusive behavior over time, likely in response to changes in child behavior. The next question then focuses on whether these changes are predictive of changes in the individual or their dyadic partner. For example, Johnco et al. (2021) found that child anxiety and depression were associated with increases in parent depression over the course of three years. Further, Yirmiya et al. (2021) found that child anxiety at early childhood, late childhood, and early adolescence each predicted

maternal anxiety and maternal sensitivity at the following time point. Even earlier in development, Buss and colleagues (Buss et al., 2021) found that dysregulated fear in children at age 2 was related to subsequent measures of maternal anxiety. As with the relation between maternal emotion regulation and children's depressive symptoms, Felton et al. (2021) also found that girls' depressive symptoms predicted increases in maternal emotion regulation.

Third, we note that the relations between child and parental symptoms were not always direct. For example, Kiel et al. (2021) found that maternal anxiety did not directly predict change in toddler anxiety risk. Likewise, Level et al. (2021) reported that maternal depression was not directly associated with changes in sensitive parenting within mother-child interactions over time. The impact of one parental behavior (sensitive parenting) was not directly associated with the same parental behavior at a later time point. Rather, the association was carried by variation in child behavior. Finally, Silverman et al. (2021) found that a treatment intervention targeting child anxiety was only indirectly associated with child anxiety levels at a 12-month follow-up through associations with parental anxiety and psychological control. These findings suggest that while child and parental anxiety were related to future functioning, these relations were often "transmitted" through the partner.

Importantly, data from the bidirectional relations help clarify the specific mechanisms that carry relations between parental and child anxiety and depression over time, pushing the field beyond higher-order correlations that simply note that construct *a* is associated with construct *b*. For example, Buss et al. (2021) found that dysregulated fear at age 2 was associated with subsequent maternal overprotective behavior, and maternal overprotection was then associated with increased child anxiety. Thus, children with dysregulated fear elicit overprotective behavior from mothers, which in turn then elicit increases in child anxiety. Further, Felton et al. (2021) report that maternal depressive symptoms may shape girls' ability to tolerate distress, and that girls' depressive symptoms contribute to mothers' own risk for psychopathology by increasing maternal impairment in emotion regulation. Earlier in development, Kiel et al. (2021) found toddler anxiety risk predicted maternal comforting behavior enacted in response to toddlers' solicitations. Toddler-solicited comforting behavior then predicted change in maternal anxiety. Finally, Level et al. (2021) found that increased sensitive parenting at 9-months was predictive of increased child engagement at 16-months, which in turn predicted increases in sensitive parenting at 24-months.

Finally, the relations between parental and child anxiety and depression symptoms varied based on a variety of individual difference factors, especially child and parent gender. For example, Cioffi et al. (2021) found that mothers' depressive symptoms were greater predictors of child internalizing symptoms than fathers' depressive symptoms. Felton et al. (2021) also found differences based on gender, with girls' depressive symptoms predicting increases in maternal emotion regulation, and maternal emotion regulation predicting increases in boys' depressive symptoms. Similarly, Hastings et al. (2021) found that maternal depression predicted adolescent

daughters' depression more strongly than among adolescent sons. Furthermore, there was no evidence in this study that fathers' emotional problems conferred risk to their adolescents' later internalizing difficulties.

Other factors were also related to the relation between parent and child anxiety and depression symptoms over time. For example, Hunter et al. (2021) found that maternal intrusiveness was related to child internalizing symptoms at age three, but only when not accounting for variation in maternal education. The highlighted papers also target the impact of factors like smoking status (Level et al., 2021), neurobiological characteristics (Hastings et al., 2021), temperament (Buss et al., 2021), treatment interventions (Silverman et al., 2021), and trauma exposure (Yirmiya et al., 2021). Further, most of these papers report differential relations based on age, helping point to specific developmental windows of openness to transmission.

Altogether, this collection of papers highlights the complex, bidirectional relations between child and parental anxiety and depressive symptoms, and how these relations might develop over time as a function of mediating individual factors, like emotion regulation, and relational parenting characteristics, like overprotectiveness or sensitivity. Collectively, this study draws attention to an important area of research for continued investigation and points to the importance of embedding intergenerational transmission into (1) relations that are dynamic and bidirectional, (2) systems that shape individual trajectories via changes in other people, (3) idiosyncratic pathways that consider individual vulnerabilities, and (4) mechanisms that are absent in the individual and only exist at the level of the parent-child relationship.

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## DATA AVAILABILITY STATEMENT

This commentary to the special issue has no associated data.

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