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Observed Adolescent Disclosure to Parents: The Roles of Parental Responses, Adolescent Adjustment, and Culture

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Philosophy

In

Psychological Sciences

by

Janice Disla

Committee in charge:

Professor Alexandra Main, Chair
Professor Jan Wallander
Professor Deborah Wiebe

2022

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The Dissertation of Janice Disla is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

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University of California, Merced

2022

Dedication

This dissertation is dedicated to my *amazing little brother*, Adarmis A. Perez, my *loving mother*, Fior L. York, and to the memory of my *beautiful little sister*, Ambar C. Disla. Thank you, sister, for always being my biggest cheerleader and supporter. Thank you, brother, for always being you and for always having my back. Lastly, thank you, Mami, I couldn't have done any of this without you, I truly am because of you. I love you all dearly.

"Thunder buddies for life!"

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Abstract

Observed Adolescent Disclosure to Parents: The Roles of Parental Responses, Adolescent Adjustment, and Culture

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Doctor of Philosophy, Psychological Sciences

University of California, Merced 2022

Dr. Alexandra Main, Chair

Adolescent disclosure to parents has been associated with a variety of positive adolescent outcomes. Studies utilizing primarily self-report have found both concurrent and prospective associations between disclosure with parental behaviors. However, self-report does not allow researchers to determine what parental behaviors directly inhibit or facilitate adolescent disclosure in real-time. Additionally, research on adolescent disclosure has focused primarily on European American middle-class families. Less is known about disclosure in underrepresented families. The goal of this dissertation is to examine a) the impact of parental emotion-related responses (ERRs) on observed adolescent disclosure, b) associations between parental ERRs, disclosure, and physical health and c) associations between disclosure, early cultural factors, and social behaviors within a diverse population. Study I explored the impact of mothers' ERRs and adolescent perspective taking on subsequent disclosures during real-time discussions. Interest and validation predicted the shortest lag times compared with other maternal ERRs. Findings highlight the importance of parental communication of both validation and interest in promoting disclosure in the context of parent-adolescent conversations. Study II examined associations between disclosure, parental ERRs, and diabetes management. Higher levels of anger and of positive affect, relative to parental baseline levels, predicted longer lag times to subsequent disclosures, whereas higher levels of expressive suppression predicted shorter lag times. However, these patterns varied depending on HbA1c. Specifically, adolescents with lower HbA1c had shorter lag times to subsequent disclosures, and adolescents with higher HbA1c had longer lag times when parents responded with increased anger compared to those with lower HbA1c. Findings highlight that parental ERRs to disclosures have implications for adolescent physical health. Study III explored associations between observed disclosure to parents, early cultural factors, and adjustment in a sample of diverse families. Adolescents from Latinx families were found to engage in lower levels of disclosure compared to adolescents from African American families. In Latinx families, speaking English in the home was prospectively associated with higher levels of disclosure. Adolescents from Spanish-speaking Latinx families engaged in lower levels of disclosure compared to adolescents from African American and English-speaking Hispanic families. Findings highlight that disclosure may vary among ethnic groups due to unique challenges with communication. Collectively, these studies identify the impact of parent behavior on adolescent disclosure during real-time interactions. These studies also provide information about how observed adolescent disclosure relates to adolescent adjustment in a variety of contexts (i.e., diverse families and those with chronic illnesses). Findings from this dissertation will inform research on adolescent disclosure from underrepresented populations and guide interventions aimed at families who struggle with a lack of disclosure from adolescents.

Chapter 1: General Introduction

The main goal of adolescence is to develop a sense of self that is separate from one's parents, while still maintaining an attachment to the family (Turner et al., 1993). During this time, adolescents begin to have a separate life outside of the family. Adolescents spend increasingly more time outside of the home as they engage in self-exploration (e.g., participating in after-school activities, working, and spending time with friends). However, during this time of adolescent self-exploration, it is crucial for parents to be aware of their adolescents' actions and activities. Parental knowledge has been associated with various positive adolescent outcomes (Stattin & Kerr, 2000), including lower levels of externalizing behaviors (Waizenhofer et al., 2004), lower internalizing problems (Stattin & Kerr, 2000), better school performance, and higher self-esteem (Darling et al., 2006).

Research has found adolescent self-disclosure to be the strongest predictor of parental knowledge and has found it to be more effective than parental monitoring in protecting children against negative outcomes (Stattin & Kerr, 2000; Hare et al., 2011). Although parents may engage in parental monitoring behaviors to acquire knowledge about their adolescent, they cannot fully monitor everything their child does, and therefore must rely more readily on adolescent self-disclosure. In what follows I will 1) introduce the current literature on adolescent disclosure, 2) outline the research questions that will be addressed in the dissertation, and 3) present the three research studies that will be utilized to examine a) the impact of parental emotion-related behaviors on adolescent disclosure in real-time, b) associations between parental emotion-related responses, observed disclosure to parents, and physical health within an understudied population (i.e., those with chronic illnesses), and c) associations between observed adolescent disclosure, early cultural factors, and social behaviors within a culturally underrepresented population (i.e., diverse families from low socioeconomic status backgrounds).

Adolescent Disclosure

Self-disclosure is commonly defined as "any information about himself/herself that a person communicates verbally to another person" (Tokić & Pećnik, 2011). The content of self-disclosure may include highly sensitive information, as well as less intimate, every day, or even superficial information (Tokić & Pećnik, 2011). Much of the research done on adolescent disclosure has typically concentrated on informational disclosure which focuses on the adolescent sharing facts about their lives (i.e., information about everyday activities and whereabouts). Adolescent self-disclosure is thought to be beneficial because it provides adolescents an opportunity to receive emotional and tangible support, to gain insight from another person, to express and regulate their negative emotions, and to potentially facilitate an ending to an aversive situation (Gamache Martin et al., 2018).

Previous research using primarily adolescent self-report has shown that disclosing to a parent about activities, feelings, thoughts, and whereabouts is associated with fewer behavioral (Frijns et al. 2010; Hamza et al., 2011; Smetana et al., 2006) and psychological adjustment problems (Laird et al, 2010). Research has shown that disclosing to a parent is associated with more positive mental health outcomes for adolescents when compared to disclosure to peers or other adults (Gamache Martin et al.,

2018). Adolescent disclosure to parents has also been associated with a variety of positive relationship factors including parents' greater trust in the adolescent, greater parental responsiveness, less adolescent involvement in disapproved leisure, less manipulation of parents, and fewer expectations of failure (Hunter et al., 2011; Smetana et al., 2009).

Adolescent disclosure also has broader health implications. When looking at a chronic illness context, disclosure is equally if not more beneficial for both the parent and adolescent. Adherence to illness management regiments and psychological well-being often deteriorate for individuals with type 1 diabetes while they navigate adolescence. However, adolescent disclosure has been found to be a key mechanism through which parents gain knowledge about adolescents' diabetes management in both early and late adolescence (Berg et al., 2017; Main et al., 2015; Osborn et al., 2013; Tucker et al., 2018) and disclosure to parents is associated with better adolescent adherence to their diabetes regimen and greater adolescent perceptions of parents' helpfulness (Berg et al., 2017).

Adolescent Disclosure and Parental Behaviors

The way parents respond to their children's emotions, concerns, and behavior is a crucial component of socialization (Eisenberg et al., 1998; Saarni, 1999; Thompson & Meyer, 2007). These responses are central to socialization in early development but retain importance in adolescence when disclosure to parents declines (Smetana et al., 2009), making it more difficult for parents to provide adequate emotional support. According to dynamic systems' perspectives, interpersonal patterns of socialization between parents and children become characteristic of relationships and influence behavior over time (Granic, 2000; Lougheed et al., 2015; Main et al., 2016). Indeed, specific parental responses are better predictors of child outcomes than general parenting style or overall relationship quality (Fabes et al., 2001; Gottman et al., 1996).

Studies using primarily self-report have examined both concurrent and prospective associations among parental behaviors that are associated with adolescent disclosure. For example, parental solicitation of information about adolescent's whereabouts and activities has been found to predict greater disclosure over the course of adolescence (Frijns et al., 2010). Generally, studies have found that negative parental responses are associated with less adolescent disclosure. For example, adolescents who expect their parent(s) to react with criticism or to invalidate their emotions when disclosing are then less likely to engage in disclosure (Solis et al, 2015; Tilton-Weaver, 2008). In addition, mothers who experienced more distress in response to their adolescents' expressions of negative emotion had adolescents whose disclosures were significantly less substantive through adolescent perceived maternal invalidation (Gamache Martin et al., 2018). Invalidating responses are those that minimize the adolescents' experience, punish the adolescent for expressing the emotion, or communicate that the experience or associated emotion is illogical, unwarranted, too extreme, or inappropriate (Gamache Martin et al., 2018). On the contrary, positive parental reactions to disclosures are associated with increased feelings of connectedness with parents, which has been associated with more adolescent disclosure over time (Tilton-Weaver et al., 2010). Research has found that parental validation significantly impacts adolescent disclosure. Specifically, adolescents who perceived their mothers as more validating made disclosures that were significantly more substantive (Gamache Martin et al., 2018). Validating responses are those that encourage the expression of

negative emotions through acceptance of the emotion or the precipitating event by communicating that it is relevant and meaningful and, at times, providing strategies for changing the emotion or the problem (Gamache Martin et al., 2018). Taken together, these findings suggest that adolescents' perceptions of positive or negative parental responses to their disclosures play a role in predicting adolescent disclosure over time.

Adolescent Disclosure and Understudied Populations

Most of the research has examined adolescent disclosure among European and European American youth from middle-class samples. A few recent studies, using primarily self-report measures, have begun to examine disclosure among adolescents from diverse cultural populations (e.g., Latinx adolescents) and socioeconomic backgrounds (i.e., low socioeconomic status youth) (Villalobos et al., 2012). Within these understudied populations, disclosure has also been associated with lower levels of negative internalizing behaviors (e.g., Laird & Marrero, 2010; Gil-Rivas et al. 2003). Research conducted using diverse cultural samples has examined and found differences in the frequency of disclosure, reasons behind why adolescents disclose, and have found culturally specific factors that impact adolescent disclosure. Jeffries (2004) found that low-income African American and Latino boys frequently reported sharing confidences with their parents whereas Asian American boys never did. In addition, Yau et al. (2009) utilized a diverse sample of lower socioeconomic status adolescents and found that disclosure to parents was moderate. They also found that Mexican American youth were more reluctant to disclose their prudential behavior to parents compared to European American youth. However, Mexican American youth disclosed more to parents about multifaceted activities compared to youth of Chinese descent. Lastly, a study conducted using Puerto Rican teens found that teens perceptions of their own and their parents' *Familismo* and *Respecto* values were generally associated with more disclosure to parents, especially mothers (Villalobos et al., 2012).

Research has begun to demonstrate that parent-adolescent relationship variables impact the likelihood of adolescents choosing to disclose differently depending on their cultural background. For example, parent–child agreement has been associated with greater adolescent disclosure among Chilean and Filipino youth (Hunter et al., 2011). Garthe et al. (2015) found that African American adolescents who perceived high levels of acceptance by parents increased their level of disclosure across a one-year period. Lastly, closeness was found to be more strongly associated with disclosure about multifaceted activities to mothers among European than among Mexican American youth (Yau et al., 2009). Taken together, these findings provide rationale for further examining adolescent disclosure and parental behaviors within understudied populations.

Current Studies

Generally, the current literature highlights two main limitations. One limitation is that the literature on disclosure has mainly relied on self-report measures of adolescent disclosure. This is problematic because self-report is not always accurate (Smetana et al., 2006). Self-report does not allow researchers to observe parent-adolescent interactions in real-time, so as to determine what parental behaviors directly inhibit or facilitate adolescent disclosure. A second limitation is that most of the research on adolescent disclosure has focused on European or European American middle-class families. Much less is known about the parental behaviors that facilitate or inhibit adolescent disclosure

in culturally underrepresented families. Taking into consideration the previously identified gaps, in subsequent chapters, I examined adolescent disclosure to parents during real-time interactions (Studies 1-3) with an emphasis on understudied populations (Studies 2-3)., through three separate but related projects.

In my first study, I examined (a) which maternal emotion-related responses (ERRs) to adolescent disclosures predicted quicker subsequent disclosures during mother-adolescent conversations, and (b) whether adolescent perspective taking moderated these associations. This study utilizes a mixed-methods approach. Specifically, adolescent self-report was utilized to measure adolescent perspective-taking ability and both adolescent disclosure and maternal ERRs were coded during a conflict discussion task. This study explores associations between parental emotion-related responses and observed disclosure to parents.

In my second study, I extend my research to examine adolescent disclosure within an understudied cultural group in a chronic illness context. Specifically, I focus on adolescent disclosure among a sample consisting mainly of Latinx adolescents diagnosed with type-1 diabetes. In this study, I examined (1) whether changes in parents' level of affect (positive, anger, sadness, anxiety, and emotional suppression) following adolescent disclosures affected the timing of subsequent disclosures during conversations, and (2) whether adolescents' diabetes management (blood glucose indexed by HbA1c) moderated associations between parent affective responses to adolescent disclosures and the timing of future disclosures. Using a similar methodology to my previous work, parents and adolescents engage in a conflict discussion about a topic related to the adolescent's diabetes management and adolescent disclosure and parent affective responses were coded moment-to-moment. Adolescent glycemic control (HbA1c) was obtained from clinic records. This study builds on the first by examining associations between parental emotion-related responses, observed disclosure to parents, and physical health using a mainly Latinx sample.

In my third study, I extend my research on disclosure in real-time interactions to a more diverse sample. In this study I examined (1) whether early-adolescent disclosure (ages 10 & 11) varies across different racial/ethnic groups (African American, Mexican American, and European American), (2) whether early cultural factors (acculturation, generational status, and language use) are prospectively associated with Mexican American adolescent observed disclosure to parents, and (3) whether observed disclosure a) within this population and b) within the various ethnic groups is associated with social behaviors (self-control, cooperation, aggressive behavior, and hyperactivity) within a sample of families from low socioeconomic status backgrounds. Again, using a similar methodology, adolescents and their parents engaged in a conflict discussion. Adolescent social behaviors were measured using teacher questionnaires. Taken together, findings from these studies will inform interventions for families struggling with a lack of adolescent disclosure.

Chapter 2: The Effect of Mothers' Emotion-Related Responses to Adolescent Disclosures and Adolescent Perspective Taking on the Timing of Future Disclosures

The way parents respond to their children's emotions is a crucial component of parents' efforts to socialize and manage their children's emotional expressions (Eisenberg, et al., 1998; Saarni, 1999; Thompson & Meyer, 2007). These responses play an important role in emotion socialization in early development, but this process continues to be important in adolescence, when emotion regulation difficulties often arise (Hollenstein & Lougheed, 2013; Morris et al., 2007). Specific parental responses to children's and adolescents' emotions are better predictors of outcomes than general parenting style or overall relationship quality (Fabes et al., & Martin, 2001; Gottman et al., 1996). Furthermore, according to dynamic systems perspectives, interpersonal patterns of socialization between parents and children become characteristic of relationships (Granic, 2000; Main et al., 2016), and specific parental responses to the child influences child behavior over time (Lougheed et al., 2015). Thus, it is important to examine real-time parental responses to children's and adolescents' emotions to inform more targeted interventions with families.

The present study used a dynamic, observational methodology to examine how contingent parental responses to adolescent disclosures in real time affect the timing of future disclosures during parent-adolescent conversations. Because adolescents' appreciation of parents' goals may influence associations between maternal and adolescent behavior, I also examined how adolescents' ability to take their parents' perspective attenuated associations between parental responses to their disclosures and the timing of future disclosures. Specifically, I tested (1) which maternal emotion-related responses (ERRs) to adolescent disclosures predicted quicker subsequent disclosures during mother-adolescent conversations, and (2) whether adolescent perspective taking moderated these associations.

Parental Responses to Children's and Adolescents' Emotions

There are two main types of parental responses to children's emotions that have been examined in the literature: unsupportive and supportive. Unsupportive responses generally consist of responding with negative affect, including distress (Gamache Martin, et al., 2018), punishment (Tao et al., 2010), minimization (Eisenberg & Fabes, 1994), and suppression (Gross & Levenson, 1993). Unsupportive responses are associated with negative child outcomes, including poorer emotion regulation (Eisenberg & Fabes, 1994; Gottman et al., 1996), lower empathy (Eisenberg et al., 1991), poorer social competence (Denham et al., 1997), and greater disorganized behavior (Roberts & Strayer, 1987), internalizing (Sanders et al., 2015) and externalizing problems (Eisenberg et al., 2001). This is thought to be because parental responses to children's emotions affects their emotional security (Davies & Cummings, 1994; Eisenberg et al., 1998), which in turn influences their behavior during social interactions and subsequent adjustment.

On the other hand, supportive parental responses include validation, reappraisal, emotional attunement, and positive emotional directives (Gottman et al., 1996; Lougheed et al., 2015; Soenens et al., 2007). In contrast to negative responses, supportive parental responses to children's emotions are associated with better emotional and social competence (Eisenberg et al., 1991; Fabes et al., 2001; Soenens et al., 2007). Parents that

react supportively to their children's emotional expressions are often successful at managing their own emotions (Bariola et al., 2011), are attuned and sensitive to their children's emotional needs in the moment, and are able to take their child's perspective and empathize with him/her (Miklikowska et al., 2011). This likely facilitates better emotional self-awareness and emotion regulation in children and adolescents (Eisenberg et al., 1998). These supportive responses go above and beyond general positivity or warmth, as these behaviors do not necessarily reflect an attuned understanding of the child's emotions in the moment (Gottman et al., 1996). Thus, it is important to not conflate positive affect more generally with specific parental supportive responses.

Parental Responses to Adolescent Disclosures

Disclosure is defined as voluntarily or spontaneously providing information about one's thoughts or feelings to another (Stattin & Kerr, 2000). Adolescent disclosure to parents is associated with better behavioral and psychological adjustment (e.g., Hamza & Willoughby, 2011; Laird & Marrero, 2010). Previous research using primarily adolescent and parent self-report has found that the quality of the parent-adolescent relationship is an important predictor of adolescents' tendency to disclose, particularly when adolescents perceive parents as trusting, accepting, warm, and affectionate (e.g., Keijsers et al., 2009; Smetana et al., 2006). Conversely, when adolescents expect their parents to respond negatively to their disclosures, they are less likely to disclose in the future (Solís, Smetana, & Comer, 2015).

Dynamic transactional theories propose that patterns of behavior during parent-child interactions and expectations about how both parents and children will behave during these interactions are informed by past exchanges (Granic, 2000). Indeed, when adolescents expect their parents to respond positively and supportively to their disclosures, they report feeling more connected to their parents and are more likely to disclose over time (Tilton-Weaver et al., 2010). Conversely, when adolescents expect their parents to respond negatively to their disclosures (e.g., with critics, disapproval, disappointment, or validation), they disclose less. In fact, when adolescents report feeling more controlled and less connected to parents and parents engage in punitive and minimizing reactions to children's emotions, children and adolescents are less likely to disclose over time and engage in greater secrecy (Tilton-Weaver et al., 2010). Such negative reactions can promote coercive cycles of interaction (Patterson, 1982), which in turn inhibit future adolescent disclosures.

On the other hand, when parents respond to adolescents' disclosures with validation (i.e., communication of understanding and appreciation, though not necessarily agreement), they are more likely to disclose again in the future. Research has shown that when adolescents perceive parents as accepting of their perspective, adolescents are more likely to disclose concurrently and over time (Smetana et al., 2006). Recent studies using observational methodologies have shown that parental validation is associated with more substantive disclosures (Gamache Martin et al., 2018) and quicker in-the-moment emotional disclosures during parent-adolescent interactions (Main et al., 2018). This is likely because parental validation communicates that adolescents' feelings are important and justified, which can allow adolescents to feel more confident and comfortable disclosing.

Taken together, this research suggests that adolescents' perceptions of positive (e.g., validating) or negative (e.g., criticism) parental responses to their disclosures pay an important role in predicting adolescent disclosure over time. However, few studies have examined specific, objective parental behaviors that facilitate or inhibit disclosure. Furthermore, most of the aforementioned studies examined parental responses to adolescent disclosures and whether these responses predict future adolescent disclosures over longer timescales (for exceptions, see Gamache Martin et al., 2018; Main et al., 2018). The present study sought to test whether and how parental responses to adolescent disclosures *in the moment* predicted more immediate subsequent disclosures during parent-adolescent conversations. Identifying these patterns of exchange during real-time interactions hold important implications for interventions with families struggling with a lack of disclosure during this important developmental period.

The Role of Adolescent Perspective Taking

Socialization is a bidirectional and transactional process (Sameroff, 2009) that involves not only parental responses to the child, but also the child's receptiveness to parents' socialization efforts. Children may be more receptive to parental socialization if they understand and appreciate the parents' goals. Such appreciation may be garnered when parents are sensitive and responsive to their children's needs, leading to a pattern of social reciprocity that fosters empathy development (Dunn & Brown, 1994). Indeed, supportive parents foster effective coping strategies and better awareness of the causes and consequences of their children's own emotions (Gottman et al., 1996; Roberts & Strayer, 1987), which may contribute to the development of understanding and appreciation of others' emotions (Schipper & Petermann, 2013). In fact, adolescents demonstrate more empathic accuracy during interactions with their parents when attachment quality is high (Diamond et al., 2012), and children demonstrate higher empathy when parents respond to their children's anxiety by encouraging adaptive (i.e., problem-focused) coping strategies (Eisenberg et al., 1991). Furthermore, the development of empathy is an intergenerational process, whereby more supportive parents have children who are more empathic (Soenens et al., 2007).

Empathy is a multidimensional interpersonal construct with affective and cognitive components (see Main et al., 2017), but in the present study I focus on the cognitive process of perspective taking (i.e., the ability to take another's point of view into consideration). This is because adolescents who can more accurately perceive their parents' intentions during interactions are likely better able to listen to and appreciate the parents' message, especially in the context of conflict (Van Lissa et al., 2017). In fact, dispositional perspective taking, more so than affective measures of empathy, predicts better problem-solving and prosocial conflict resolution with parents over the course of adolescence (Van Lissa et al., 2016). Only one recent study to my knowledge has examined links between adolescent disclosure and empathy. This study found that adolescent disclosure about distressing events mediated the relation between mothers' own disclosure and adolescent prosocial behavior (Kil et al., 2018). Adolescents with better perspective taking may disclose more to parents because they appreciate that the parent wants to engage with them and learn more about their experiences. Furthermore, adolescents high in perspective taking might more clearly articulate their point of view in

a way the parent can understand, making it easier for parents to respond supportively to their concerns.

Taken together, this research suggests that open and supportive relationships foster both adolescent disclosure and empathy development. However, no studies to date have examined whether parents' observed responses to adolescent disclosures facilitate further disclosure during real-time interactions, and whether adolescents' dispositional perspective taking attenuates the effects of parents' responses to their disclosures.

The Present Study

The present study had two central aims: (1) identify maternal ERRs (negative, positive, validation, interest, and neutral) to adolescent disclosures that predicted quicker subsequent disclosures during mother-adolescent conversations, and (2) determine whether adolescent perspective taking moderated these associations. I hypothesized that maternal validation and interest in response to adolescent disclosures would predict the shortest lag times to subsequent disclosures, whereas negative affect would predict the longest lag times. Because validation and interest are important in the context to emotion socialization above and beyond general warmth and positivity (see Gottman et al., 1996), I examined positive affect separately. Furthermore, I hypothesized that adolescent perspective taking would moderate associations between maternal ERRs to disclosures and the timing of future disclosures. Specifically, I expected that adolescents higher in perspective taking would disclose again more quickly when parents validated or expressed interest in response to their disclosures compared with adolescents low in perspective taking.

Method

Participants

Participants were 50 adolescents (30 female; M_{age} = 14.84 years, *SD* = 1.99, range = 13 to 18 years) and their mothers who participated in a study on mother-adolescent communication (see Main et al., 2016). One dyad was excluded from the analyses due to an error in researcher instruction, resulting in analysis of 49 dyads. The racial/ethnic composition of the sample is as follows: 62% non-Hispanic white, 16% non-Hispanic black, 10% Asian/Pacific Islander, 4% Hispanic, and 8% other. Maternal education ranged from a high school degree to an advanced graduate degree, with the median highest degree obtained being a bachelor's degree (36.0%). Families' annual income ranged from less than $25,000 per year to more than $150,000 per year, with the average family income being $81,000 to $100,000.

Procedures

The research was approved by the Institutional Review Board at the institution where the research was conducted. Mothers and adolescents were recruited from local communities in the San Francisco Bay Area through schools, teen afterschool programs, parenting groups, and parent newsletters. Mothers and adolescents participated in a 1.5-hour laboratory visit. Mothers and adolescents independently each identified two topics that they felt caused the most disagreement in their relationship using the modified version of the Issues Checklist (Prinz et al., 1979) and subsequently discussed two of these topics that were rated as most upsetting to them both for 10 minutes each without a researcher present. Two video cameras (one facing each participant) captured the participants' facial expressions, vocalizations, gestures, and posture. A researcher

knocked on the door after 10 minutes to indicate it was time to switch to the second topic. If fewer than 10 minutes elapsed after the dyad finished discussing the first topic, they were encouraged to switch to the second topic. Mothers were given a $20 check, and adolescents were given a $20 gift card for participating.

Measures

Adolescent disclosure. Parent-adolescent conflict discussions were coded for adolescent disclosures using modified versions of the Couples Interaction Coding (Marsh, et al., 2002) and the Supportive Behavior Coding systems (Allen et al., 2001). The conflict discussion context was chosen as an ecologically valid measure of parent-adolescent communication processes (see Eisenberg et al., 2008) with the goal of eliciting spontaneous disclosures. Adolescent statements were coded as disclosures if the adolescent communicated something that the parent would not have automatically known, that would not necessarily come up in everyday conversation (Marsh et al., 2002), or that could have been kept secret (Allen et al., 2001). For example, "It makes me feel upset when you act like you don't trust me" or "Dad doesn't want to talk to me" would be coded as instances of disclosure. Each discussion was divided into adolescent and mother conversation turns. Each adolescent conversation turn was rated for whether disclosure occurred for that particular turn. The onset and offset time of each disclosure within each conversation turn was recorded to capture the timing and duration of individual disclosures to allow examination of temporal contingencies between adolescent disclosures and maternal ERRs (see Analytic Plan). Each conversation turn was treated as a new potential opportunity for adolescent disclosure. Therefore, if a topic that had been discussed previously was later elaborated on, this was coded as a separate instance of disclosure.

Codes were recorded using Mangold INTERACT (version 16). I trained an undergraduate research assistant to reach 75% agreement on training videos over a three-month period prior to the start of coding. Weekly calibration checks were held to discuss any disagreements and minimize coder drift. Interrater reliability was calculated for the agreement on the presence or absence of each disclosure within a 5-second window and was checked across 30% of the videos. I served as the "gold standard" to which the other observer's codes were compared; thus, my codes were included in the final analyses for videos that were coded by both observers. Observers had very high agreement on the presence or absence of disclosures (99.69%).

Maternal ERRs to Adolescent Disclosures. Maternal ERRs were coded during the discussions with the 16-code version of the Specific Affect Coding System (SPAFF), an observational coding scheme for capturing emotion-related behavior during interpersonal interactions (see Coan & Gottman, 2007) The SPAFF is divided into positive, negative, and neutral codes, with specific emotions within each dimension. Codes were determined based on a gestalt of facial expression, verbal content, vocal tone, gestures, and body movements and were assigned in a mutually exclusive and exhaustive manner, meaning that only one code was applied at each time point. To test the study hypotheses, maternal ERRs were collapsed into four categories: negative (e.g., contempt, criticism), positive (e.g., humor, affection), interest (e.g., open-ended questions, positive nonverbal attention), validation (e.g., direct expressions of understanding, nonverbal back channels), and neutral (see Main et al., 2016).

Mangold INTERACT (version 14) was used to code maternal ERRs. A separate team of two undergraduate research assistants were trained to reach 75% agreement across all codes prior to the start of coding. Interrater reliability was based on second-by-second concordance (onset and offset times were required to occur within a 5-second window) between observers' ratings across the interaction. All interactions were coded by both undergraduate research assistants. A researcher coded approximately 30% of the videos and served as the "gold standard" to which the other observers' codes were compared, as recommended by Coan and Gottman (2007). Codes from the undergraduate observers were used in the final analyses. The disclosure and maternal ERR coding teams were blind to each other's ratings. Due to the categorical nature of the data, Cohen's kappa was used to calculate interrater reliability, with a minimum of .70 kappa required for data to be included in final analyses; videos were recoded until this reliability criterion was met. Weekly calibration checks and discussions were conducted to minimize coder drift. The average kappa across all codes was .77 (range = .62 to .88).

Adolescent perspective taking. The perspective taking subscale of the Interpersonal Reactivity Index (IRI; Davis, 1983) was used to measure adolescent perspective taking. The 28-item IRI is a commonly used measure of distinct components of empathy. Adolescents rated on a scale of 1 (*Does not describe me well*) to 5 (*Describes me very well*) to what degree each statement described them. Sample items include, "I try to look at everybody's side of a disagreement before I make a decision" and "When I'm upset at someone, I usually try to 'put myself in his shoes' for a while." The reliability for the perspective taking subscale for adolescents in the current study was adequate (α = .75) and consistent with reliabilities found in previous research using adolescent samples (e.g., Van Lissa et al., 2017).

Results

Data Setup and Analytic Plan

Behavioral coding resulted in two continuous streams of data – one for mothers, and one for adolescents. Mothers' time series consisted of mutually exclusive affective states and adolescents' time series consisted of mutually exclusive states of disclosing or not disclosing. This approach allowed me to identify the timing of adolescent disclosures relative to the timing of mothers' ERRs. For each disclosure, the maternal ERR was identified as the last behavior the mother displayed during each instance of adolescent disclosure. Depending on the duration of individual disclosures, mothers often expressed multiple behaviors during the adolescent disclosure; thus, to be considered a response, the maternal behavior needed to occur toward the end of the disclosure. Therefore, the onset of the maternal response could not occur more than one second following the offset of the adolescent disclosure but could overlap with the end of the adolescent disclosure. This approach was taken after a researcher and I reviewed several videotapes and reached an agreed that the maternal response to adolescent disclosures was best captured using this procedure. There is no clear consensus in the literature regarding what qualifies as a "response" using time series data, but generally some degree of temporal overlap is present to ensure confidence in the contingency of behaviors (see Lougheed et al., 2015); thus, maternal responses sometimes overlapped with adolescent disclosures (especially in the case of nonverbally expressed ERRs). The categories of maternal ERRs (negative,

positive, validation, interest, and neutral) were dummy coded into 0s and 1s, allowing for comparisons across maternal response type in the analyses.

The dependent variable in all analyses was the lag time to subsequent adolescent disclosures. To identify lag times, first, each instance of disclosure for each adolescent was identified. Next, the number of seconds until the next disclosure was calculated. This procedure was repeated for each dyad until the last disclosure the adolescent made in the conversation. This resulted in a total of 678 data points and 49 missing cases of data, the latter reflecting the lack of a subsequent disclosure for the final disclosure for each adolescent. Descriptive statistics for study variables (maternal ERRs, disclosure variables, and adolescent perspective taking) are presented in Table 1.

Disclosure declines as adolescents get older (e.g., Smetana et al., 2009) and perspective taking abilities improve with adolescent age (Eisenberg et al., 2001). Furthermore, female adolescents disclose more than male adolescents (Papini et al., 1990). Indeed, preliminary analyses revealed that older adolescents had longer durations of disclosure compared with younger adolescents ($r = .37$, $p = .008$), mothers were more likely to display validation toward older adolescents compared with younger adolescents ($r = .29$, $p = .04$), and mothers were more likely to display interest in conversations with girls compared with boys ($t(47) = 2.12$, $p = .04$). Therefore, adolescent age and gender were included as covariates. Additionally, to ensure that effects of maternal ERRs were independent of adolescents' overall tendency to disclose and mothers' general emotional behavior, I controlled for total frequency and duration of adolescent disclosure and overall durations of maternal emotional behaviors in the models.

Predicting Lag Time to Future Adolescent Disclosures Based on Maternal ERRs to Previous Disclosures

To examine which maternal ERR(s) predicted shorter lag times to subsequent adolescent disclosures, five multilevel generalized linear mixed-effects models using a Poisson distribution were conducted using SPSS (Version 24). In all models, the dependent variable (lag time) was the number of milliseconds until the next disclosure. Thus, a Poisson distribution was considered appropriate because the dependent variable was a count variable whose distribution closely approximated that of a Poisson distribution both visually and numerically (Gardner, Mulvey, & Shaw, 1995). Outcome estimates were exponentiated to indicate effect size differences between each maternal ERR and the reference group in seconds.

Using a multilevel modeling framework, family ID was used as a SUBJECTS variable to take into account the repeated measures aspect of the independent (maternal ERRs) and dependent (lag times) variables for each dyad. Each model substituted out one of the maternal ERRs (negative, positive, validation, interest, and neutral) that served as reference group to which all the other maternal responses were compared, resulting in a total of five models. Maternal ERRs were included in each model as fixed effects. Overall adolescent disclosure frequency and duration and the overall duration of each maternal ERR were included in each model as random effects because they were significantly correlated with the dependent variable.

Results of these models are presented in Table 2. Somewhat contrary to hypotheses, when mothers responded to adolescent disclosures with neutral affect, lag times to subsequent disclosures were longest compared with when mothers responded

with any of the ERR categories (Model 1). When mothers responded with validation (β_3) or interest (β_4) to adolescent disclosures, adolescents subsequently disclosed about 27 seconds more quickly for validation and 37 seconds more quickly for interest, compared with if the mother responded to the previous disclosure with neutral affect. Though significant, the differences between neutral and negative and positive responses were very small (less than one second for negative and less than three seconds for positive; see Model 1, β_1 and β_2). When mothers responded with positive affect, adolescents disclosed more quickly than if mothers responded with negative affect, but only by about two seconds (Model 2, β_1). Both validation and interest yielded significantly shorter lag times compared with negative (Model 2, β_1 and β_2) and positive affect (Model 3, β_1 and β_2). When validation was used as a reference group, interest responses yielded significantly shorter lag times to subsequent disclosures by about 12 seconds (Model 4, β_1). Thus, maternal interest responses yielded the shortest lag time to subsequent disclosures compared with other maternal ERRs.

Interactions between Maternal ERRs to Disclosures and Adolescent Perspective Taking Predicting Lag Times to Subsequent Disclosures

To test my second aim of whether adolescent perspective taking moderated associations between maternal responses to adolescent disclosures and lag time to subsequent disclosures, the main effect of adolescent perspective taking and each maternal ERR was included as main effects, and the interaction terms between perspective taking and each maternal response were included in a subsequent model with neutral affect as the reference group (see Table 3). To examine interactive effects, adolescents were divided into high and low perspective taking based on the mean of this variable (see Table 1). The effect these interaction coefficients have on the exponent of the predicted outcome can be interpreted as the difference in the effect size for specific maternal ERRs between adolescents with high and low perspective taking.

Results indicated that while there was no main effect of adolescent perspective taking on lag time to subsequent disclosures, there were significant interactions between adolescent perspective taking and each maternal ERR. Probing of the interactions revealed that when mothers responded to adolescent disclosures with non-neutral affect, adolescents high in perspective taking were more likely to disclose again more quickly (see Figure 1). This was particularly true for when mothers responded to adolescent disclosures with interest, with adolescents high in perspective taking disclosing on average approximately 8 seconds more quickly than adolescents low in perspective taking (see Table 3, β_4). Interestingly, the interactive effect of maternal ERRs and adolescent perspective taking was smallest for validation. Specifically, if mothers responded to adolescents' previous disclosures with validation, adolescents subsequently disclosed only about 3 seconds more quickly if they were high in perspective taking (β_3), compared with approximately 7 seconds more quickly if mothers responded with positive or negative affect (β_1 and β_2).

Discussion

The present investigation examined contingent temporal associations between adolescent disclosures, mothers' ERRs to these disclosures, and the timing until subsequent disclosures during parent-adolescent conversations. This study is unique in that it tested whether specific maternal ERRs to adolescent disclosures *in the moment*

predicted the timing of future disclosures. Consistent with my hypotheses, results indicated that when mothers responded to adolescents' disclosures with validation (i.e., understanding) or interest (i.e., curiosity), adolescents were more likely to make subsequent disclosures with a shorter lag time – they were more likely to disclose again more quickly – than if mothers responded with positive, negative, or neutral affect. Interestingly, the lag time until subsequent adolescent disclosures was longest when mothers responded to disclosures with neutral affect, though differences between neutral, positive, and negative affect, while statistically significant, were quite small. Furthermore, the effect of maternal responses on the timing of adolescent disclosures was attenuated by adolescents' perspective taking. Specifically, adolescents high in perspective taking were more likely to disclose more quickly when their mothers responded to their disclosures with non-neutral affect, particularly when mothers responded with interest. Below I discuss these findings in detail and consider their implications for the promotion of disclosure in adolescence.

Maternal Responses to Adolescent Disclosures and the Timing of Subsequent Disclosures

Impressively, when mothers responded to adolescent disclosures with validation, adolescents disclosed again on average about 27 seconds more quickly than if mothers responded to adolescent disclosures with neutral affect and 37 seconds more quickly if mothers responded with interest. These findings remained after controlling for overall levels of maternal behaviors and adolescent disclosures displayed during the conversations. Thus, these findings reflect the effect of specific maternal responses to adolescent disclosures *in the moment*, rather than global features of the mother-adolescent interaction.

Parental validation of their children's emotions is key in facilitating strong emotion regulation skills in children and adolescents by communicating that their feelings are justified (Gottman et al., 1996). These socialization processes are important early in development, but become prominent in adolescence when difficulties with emotion regulation often arise (Hollenstein & Lougheed, 2013). Moreover, my findings are consistent with previous research on adolescent disclosure using self-report finding that adolescents are more likely to disclose to parents if they perceive the parent as accepting (Keijsers et al., 2010) and expect parents to react supportively (e.g., with validation) to their disclosures (Tilton-Weaver et al., 2010). Indeed, recent observational studies on adolescent disclosure have found that adolescents' perceived parental validation is associated with more substantive disclosures (Gamache Martin et al., 2018) and that older adolescents are more likely to disclose more quickly in the context of high maternal validation (Main et al., 2018).

Parental interest may have been a particularly important predictor of the timing of subsequent adolescent disclosures in the present study because it reflects parental solicitation (Fröjd et al., 2007), which has also been associated with greater disclosure using self-report (Keijsers et al., 2010; Stattin & Kerr, 2000). The observed pattern of adolescent disclosure followed by maternal interest, in turn followed by adolescent disclosure likely reflects adolescents' elaborations by disclosing more information about the topic. However, previous findings on whether parental solicitation predicts greater adolescent disclosure is somewhat mixed, with some findings finding null or even

opposite effects (e.g., Keijsers et al., 2009). This may reflect adolescents' perceptions of parental solicitation as intrusive, especially during a time when adolescents are striving for greater autonomy (Fuligni, 1998).

It is important to note that parental questions were coded as interest in the present study only if they were deemed by observers to genuinely reflect curiosity and interest in the adolescent's point of view (see Coan & Gottman, 2007). Questions deemed intrusive were coded as domineering (a negative code), providing us with confidence that observers' coding of parental interest reflects genuine curiosity to learn more about the adolescent's point of view and feelings. Furthermore, parental interest could be nonverbal (e.g., positive nonverbal attention), which may have facilitated greater disclosure than direct questions. One of the main advantages of this observational method is the ability to capture naturally-occurring behaviors during parent-adolescent conversations, which sheds greater light on how parents facilitate disclosure in the context of these relationships. While both validation and interest were found to be important predictors of subsequent disclosure in the present study, functional differences in these behaviors may help explain the larger impact made by communicated mother interest. Specifically, while validation communicates understanding and thus, less of a need for elaboration, interest demonstrates a desire to learn more and therefore may prompt a social partner to disclose further.

Contrary to hypotheses, results showed that maternal negative affect was associated with *shorter* lag times to subsequent disclosures compared with when mothers responded with neutral affect. It is possible that neutral affect demonstrated a lack of engagement by the parent, discouraging adolescents from engaging in further disclosure. However, this result should be interpreted with caution given that the average difference in lag time between negative and neutral affect was less than one second. It is possible that in the context of conflict that adolescents expected their mother to express more negative emotion, and thus were less deterred from disclosing when mothers responded negatively than they might be in other conversational contexts. In fact, open expression of negative emotion is often central to resolving conflict (Dailey, 2006) and a recent study showed that older adolescents disclosed more quickly in the context of high maternal negative affect compared with low negative affect (Main et al., 2018). It is also possible that distinct negative emotions had different effects on the timing of subsequent disclosures. For example, adolescents may have had longer lag times to subsequent disclosures when parents responded with criticism vs. sadness. Research conducted by Walle & Campos (2012), found that there are important distinctions in the functions emotions serve in interpersonal interactions within valence. Though I did not have the power to detect differences between negative emotions in the current study, this is an important direction for future research.

Though positive parental responses (e.g., affection, humor) were associated with shorter lag times to subsequent disclosures compared with neutral and negative affect, these differences were small (less than 3 seconds). The distinctive findings between positive parent responses, validation and interest are noteworthy given that validation and interest are often collapsed with other positive behaviors. The most frequently-occurring parent positive ERR code in the present study was humor. Although humor is generally a positive feature of parent-adolescent interactions, it may not be as effective in promoting

further adolescent disclosure because it may reflect a lack of engagement with or seriousness about the adolescent's perspective. My findings highlight the importance of examining the unique roles that specific positive behaviors may play in the context of parent-adolescent conversations. This is consistent with Gottman and colleagues' (1996) emotion coaching framework, in which general parental positivity and warmth is considered a separate parenting dimension from parents' attunement to their children's emotions. Indeed, general parenting styles are not as predictive of child outcomes as specific parenting behaviors (Bardack et al., 2017).

The Role of Adolescent Perspective Taking

Though there was no main effect of adolescent perspective taking on the timing of subsequent disclosures, there were significant interactions between maternal ERRs to adolescent disclosures and adolescent perspective taking. Specifically, adolescents high in perspective taking were more likely to make quicker subsequent disclosures when mothers responded to their previous disclosures with non-neutral affect. This was particularly true for maternal interest responses. Although maternal interest was coded as reflecting genuine curiosity, it is possible that adolescents varied in their appreciation of their mother's goal in expressing interest as a function of their perspective taking tendencies.

Perspective taking abilities improve over the course of adolescence (Van der Graaff et al., 2014), in part due to cognitive changes that facilitate improved emotion regulation, executive functioning, and social cognition, and developments in affective processing during this period (De Waal, 2007). Adolescents high in perspective taking may have been able to more fully appreciate their mothers' goal of wanting to learn more about the adolescent's point of view and/or feelings when mothers expressed interest; thus, these adolescents were more likely to engage in subsequent disclosures more quickly. In fact, adolescents high in empathy are more accurate in their perceptions of parents' intentions during conflict interactions (Van Lissa et al., 2017). It is also possible that parent-adolescent dyads in which mothers engaged in high levels of interest and adolescents were high in perspective taking reflects a more global dynamic of high parent-adolescent relationship quality. Indeed, adolescents are more empathically accurate in relationships with good attachment security (Diamond et al., 2012). Though global perceptions of relationship quality are important, the present study's use of dynamic methods to capture transactional associations between responses to children's and adolescent's emotions and behaviors sheds light on how such patterns become characteristic of relationships over time (Granic, 2000).

Limitations and Future Directions

Though informative, this study had limitations deserving further consideration. First, only mothers were included. Fathers generally display less supportive and more non-supportive responses to children's negative emotions (Cassano et al., 2007) and adolescents report disclosing less to fathers than to mothers (Smetana et al., 2006). However, very few studies have examined discourse patterns in observational studies with fathers. Thus, future research could incorporate fathers and other caregivers to determine whether the observed patterns are consistent across different relationships.

Second, the study examined the timing of adolescents disclosures, but the content of their disclosures (i.e., what adolescents disclose about) is also important (see Rote &

Smetana, 2016). Adolescents with better perspective taking skills might choose *not* to disclose certain information parents to avoid making the parent upset or to avoid punishment, such as activity relating to sexuality or drug use. Indeed, one common reason adolescents provide for choosing not to disclose to parents is fear of getting in trouble (Darling et al.,, 2006). Thus, examining the content of disclosure during real-time parent-adolescent interactions is an important direction for future work.

Third, though the present study makes an important contribution to the literature by assessing adolescent disclosure in a context in which they were not explicitly instructed to disclose, adolescents may have felt less comfortable than they would in everyday life disclosing to parents during videotaped conversations about topics that might elicit negative emotion or disapproval from the parent. An important direction for future work would be to examine spontaneous disclosures to parents in the home environment.

Fourth, though examining specific parental responses to adolescent disclosures using behavioral coding is a unique strength to the present study, adolescent interpretations of parental behaviors were not captured. It would be interesting to examine whether adolescents with more accurate perspective taking regarding specific parental behaviors were more likely to engage in quicker subsequent disclosures. Future research using methods to capture such perceptions (e.g., video recall tasks) are needed to test this hypothesis.

Finally, although the present study examined temporal contingencies between parental responses and future adolescent disclosures, a study that combines micro-level and longer timescales is needed to determine whether these patterns change over adolescence (Cole et al., 2016).

Conclusions and Implications

Within a naturalistic discussion, adolescents engaged in more frequent disclosure when mothers responded to their previous disclosures with validation and interest. These findings suggest that validation and interest are particularly important in promoting adolescent disclosure in the context of parent-adolescent conversations, highlighting the important and unique role that parent communication of validation and interest serve in facilitating adolescent disclosure. These behaviors are particularly important given the limited time and frequency of opportunities that parents may have to solicit such disclosures. The present study holds important implications for interventions with families struggling with lack of disclosure. Specifically, parents should be encouraged to validate and show interest in their adolescent's point of view and feelings to encourage future disclosures. Furthermore, interventions promoting perspective taking skills in adolescence may promote greater adolescent appreciation of parents' communication attempts, which in turn can facilitate stronger parent-adolescent relationships

Chapter 3: Parent Affective Responses to Adolescent Disclosures and the Timing of Future Disclosures in the Context of Type 1 Diabetes Management

Parent-child relationship dynamics become increasingly transactional in adolescence (Lougheed, 2020). Disclosure to parents is a key way that adolescents regulate information to which parents have access as they become increasingly independent (Stattin & Kerr, 2000) and has been associated with better adolescent behavioral adjustment and mental health outcomes (Feiring et al., 1998) as well as physical health outcomes, such as better diabetes management (see Berg et al., 2017). The prevalence of type 1 diabetes among children and adolescents is increasing (Mayer-Davis et al., 2017) and management during adolescence can be particularly challenging due to biological and social changes (Plamper et al., 2017). Recent work demonstrates that specific parental affective responses to adolescent disclosures are better predictors of future disclosures and adolescent outcomes than general parenting characteristics or overall relationship quality (Disla et al., 2019; Gamache Martin et al., 2018; Main et al., 2019). However, studies examining real-time parent transactional dynamics during parent-adolescent interactions in the context of diabetes management are lacking. The current study utilized an observational methodology to investigate (a) how parent affective responses to adolescent disclosures during discussions about diabetes-related conflicts affect the timing of subsequent disclosures, and (b) whether these dynamics vary as a function of adolescents' HbA1c (an index of average blood glucose levels, with higher levels indicating poorer glycemic control). Examining parental responses to adolescent disclosures in real time in families managing type 1 diabetes will inform more targeted interventions for families struggling with positive parent-adolescent communication, which can facilitate better diabetes outcomes (e.g., May et al., 2017).

Parent Responses to Adolescent Disclosures

Disclosure is defined as voluntarily or spontaneously providing information about one's thoughts and feelings to another (Stattin & Kerr, 2000). Adolescents are more likely to disclose to parents when the relationship is characterized by trust, acceptance, and warmth (Keijsers et al., 2009; Smetana et al., 2006) and less likely to disclose when adolescents expect parents to respond negatively (e.g., with criticism; Tilton-Weaver et al., 2010). Most research on parental predictors of adolescent disclosure has relied on self-report. However, social desirability concerns or recall biases may prompt adolescents to overreport how much they disclose to parents (Berg et al., 2017). Thus, observing adolescent disclosure during real-time interactions with parents and the kinds of emotions that parents express in response to disclosures (e.g., positive, anger, sadness, anxiety) provides insight into adolescent disclosure in everyday life.

One type of affective response during social interactions that has received a great deal of attention in the adult literature is expressive suppression, in which individuals make attempts to hide their emotional experiences from others (Aldao et al., 2015). A large body of research suggests that when individuals suppress their emotions, they experience more intrapersonal costs including increased depressed mood, greater fatigue, and lower self-esteem (see Cameron & Overall, 2018). In the context of interpersonal interactions, individuals who report greater expressive suppression report lower levels of closeness, social support, and relationship quality during such interactions (Low et al.,

2017). However, expressive suppression, when used sparingly, may serve positive functions during interpersonal interactions. A recent study with adult romantic partners found that expressive suppression had a curvilinear effect on the partner's relationship satisfaction and discussion success (Girme et al., 2021), suggesting that at moderate levels, expressive suppression may confer benefits during interactions in close relationships. In the context of parent-child interactions, the literature is also mixed, with some studies finding negative consequences of suppressing emotions during parent-child interactions, including decreased affective flexibility (Hollenstein & Lewis, 2006) and reduced warmth and engagement (Waters et al., 2020), whereas other studies find a moderate level of suppression to be adaptive within difficult social tasks such as conflict (Van der Giessen & Bögels, 2018).

Adolescent Disclosure and Type 1 Diabetes Management

Type 1 diabetes management involves a complex regimen of blood glucose checks, insulin administration, and regulation of diet and exercise to keep blood glucose in the normal range (Chiang et al., 2018). Managing blood glucose levels (HbA1c) is critical for preventing both short-term health problems (e.g., extreme hypoglycemia) and long-term health complications (e.g., kidney disease; see Sherwani et al., 2016). Adolescence can be a particularly challenging time for diabetes management as both adherence to diabetes regimens and physiological management often deteriorate during this period (see Borus & Laffel, 2010). However, type 1 diabetes management during adolescence can be strengthened through greater parental knowledge about self-care behaviors (Berg et al. 2017).

One way in which parents gain knowledge about their adolescent's diabetes management is through voluntary adolescent self-disclosure about diabetes problems (Osborn et al., 2013), which in turn is linked with better self-management, fewer depressive symptoms, and lower HbA1c (see Berg et al., 2017). Global parenting behaviors such as collaboration, warmth, control, and hostility during observed interactions with adolescents (e.g., conflict discussions) have been associated with lower (i.e., better) HbA1c and more positive mental health in samples with type 1 diabetes (Gruhn et al., 2016; Jaser & Grey, 2010). However, given that specific parental responses to adolescent emotions and behaviors are better predictors of child and adolescent outcomes than more global aspects of relationship quality in the general developmental literature (Fabes et al., 2001; Main et al., 2019), it is important to examine how specific parental responses to adolescent disclosures about type 1 diabetes is associated with future adolescent disclosures and physical health in this population.

The Importance of Timing

Dynamic systems theory asserts that parent-child dyads have a tendency to get "stuck" in affective cycles, with each partner approaching social interactions with expectations about each other's affective responses (e.g., Hollenstein et al., 2013). Though a handful of studies in the general developmental literature have examined parent emotion-related responses to adolescent disclosures during real-time interactions (Disla et al., 2019; Gamache Martin et al., 2018; Main et al., 2019), none to my knowledge have tested the extent to which a parents' concurrent affective state at the time of disclosure changes (or does not change), and how this influences the timing of future disclosures within an interaction. For example, if a parent expresses increased anger following their

adolescents' disclosure, this elevation in anger would be expected to discourage the adolescent from further disclosure (Tilton-Weaver, 2014). Prior studies have used lagged sequential analysis to determine whether occurrence of one person's emotion (e.g., anger) is more likely to occur immediately following the partner's expression of anger (see Butler et al., 2011). However, examining the degree to which the parents' level of anger changes following a disclosure relative to their overall tendency to express anger is important because individuals vary considerably in their emotional baseline (e.g., Liu et al., 2017).

One study used a dynamic, transactional approach to investigate how parents facilitate adolescent disclosure in the context of type 1 diabetes management using a daily diary method (Berg et al, 2017). This study found that on days when adolescents disclosed to mothers about diabetes, adolescents experienced better daily self-management and fewer daily diabetes-related self-regulation failures. On a longer timescale, during years when mothers' and fathers' knowledge and disclosure to fathers were above a person's own average level, adolescents had lower Hb1c and higher self-care (Berg et al., 2019). However, it remains unclear how parental responses to adolescent diabetes-related disclosures on a momentary level (i.e., during parent-adolescent conversations) predict subsequent adolescent disclosures, and whether these associations vary as a function of diabetes management. Adolescents who are having more difficulty managing their diabetes may experience more negative emotions related to their diabetes management; thus, parental responses to their disclosures may be linked more strongly to the timing of their future disclosures. These micro-level (e.g., second-to-second) behaviors critically shape the progression of the conversation along with the emotional and behavioral consequences of the conversation. Further, assessing mutual influences between parents and adolescents at the micro-level has important implications for developing interventions that target specific relationship dynamics (Beveridge & Berg, 2007) because micro-level behaviors are more amenable than global behaviors as targets for intervention. Given the importance of disclosure for adolescent health in this population, understanding how parental affective responses facilitate or inhibit future disclosures during real-time discussions about challenges related to diabetes management can inform interventions aimed at promoting disclosure to parents during this important developmental period.

The Present Study

The present study used an observational approach to examine how contingent parental affective responses to adolescent disclosures in real-time affect the timing of future disclosures during parent-adolescent conversations about diabetes-related conflicts in a diverse sample of adolescents with type 1 diabetes and their parents. First, I tested whether changes in parents' level of affect (positive, anger, sadness, anxiety, and expressive suppression) following adolescent disclosures affected the timing of subsequent disclosures during conversations. Specifically, I examined whether parents' affect level increased, decreased, or stayed the same relative to their baseline affect, and whether these changes (or lack thereof) predicted the lag time to adolescents' subsequent disclosures. I hypothesized that adolescents would take longer to disclose again when parents responded to adolescent disclosures with higher levels of anger, sadness, and anxiety. I also hypothesized that adolescents would take less time to disclose again when

parents responded with higher levels of positive affect. Given the mixed literature on the role of parental expressive suppression, I did not have specific hypotheses about the direction of the effect of increased vs. decreased expressive suppression on the timing of future disclosures. Second, I examined whether adolescents' glycemic control (average blood glucose indexed by HbA1c) moderated associations between parent affective responses to adolescent disclosures and the timing of future disclosures. Smetana et al. (2009) previously found that adolescents disclose less to their parents about health issues primarily because they are afraid of parental disapproval or punishment. Adolescents who are facing greater glycemic control challenges may be more reluctant to continue disclosing to their parents if their previous disclosure is met with signs of parental disapproval for fear of exacerbating the parental negative response. Therefore, I expected that when parents responded to previous disclosures with greater anger, anxiety, or sadness, adolescents with higher HbA1c would take longer to engage in subsequent disclosure compared to adolescents with lower HbA1c.

Method

Participants

Participants included 84 adolescents with type 1 diabetes mellitus (81% Latinx; 58% female, $M(SD)_{\text{age}}$ = 12.74 (1.79) years) and their parents (86% mothers) who participated in a multisite study of family communication about type 1 diabetes during adolescence; 71 dyads had observational data available for analysis. However, one dyad was excluded because they did not speak to each other during the discussion task. Therefore, 70 dyads were thus included in the current study. Adolescents and parents were recruited at their pediatric endocrinology clinic in a small city in an agricultural region of Central California (N = 38 families) and in a large metropolitan area in Southern California (N = 46 families). Adolescents were eligible if diagnosed with type 1 diabetes for at least one year, were 10 to 15 years of age at the time of participation (when diabetes management typically declines; Spaans et al., 2019) and parent-adolescent conflict increases (Collins & Laursen, 2004), could read and speak English or Spanish, and had no condition to prohibit study completion (e.g., severe intellectual disability). Primary caregivers' education ranged from some high school or less (26%) to a Master's degree (3.5%), with the majority of primary caregivers' having obtained less than a college degree (69%). A socioeconomic status variable was computed by standardizing annual household income and primary caregiver's education and taking the mean of these two values.

Procedure

The study was approved by the appropriate Institutional Review Boards, with parents providing informed consent and adolescents providing assent. Procedures involved an in-person session that consisted of surveys and a video-taped conflict discussion. When Spanish versions of measures were not available, the measure was translated and back translated from English to Spanish by bilingual staff. Parents and adolescents completed the assessments in the language in which they were most comfortable, with 69% of parents and all but one adolescent completing the assessment in English. Parents were paid $20 for completing the laboratory procedures and surveys and adolescents were given a $20 gift card; participants also received parking vouchers.

Parents and adolescents independently identified a topic they frequently argued about in the past month related to the adolescent's diabetes management using the Diabetes Family Conflict Scale (Hood et al., 2007), which asks participants to indicate how much they argued in the past month about 20 topics related to diabetes management (e. g, "remembering to check blood sugars") on a scale of 1 (*never*) to 3 (*almost always*). The topic rated most highly by both parents and adolescents was chosen as the topic to discuss, and parents and adolescents subsequently were recorded while they discussed this topic for 10 minutes without a researcher present. A researcher provided the following instructions to guide the discussion: "A little while ago, each of you read through a list of topics that parents and teens with diabetes often talk about. You each identified the topics that you have talked about during the last month and rated which ones made you feel most upset. You both chose [topic] as a "hot" topic for the last month. For the next 10 minutes, I would like for you to discuss with each other what the topic is and how it makes you feel. Try to focus on the other person's feelings and point of view during your discussion. We would like for both of you to contribute to the discussion. We will come back in after the time is up." Participants were given a card with three questions for them to address to remind them of the purpose of the task: (1) What is the topic? (2) How does it make each of you feel? Why? (3) What might be a good solution? After providing these instructions to the dyad, recording began, and the researcher left the room. The researcher knocked on the door to indicate 9 minutes had elapsed and re-entered the room after 10 minutes had elapsed. Families completed the discussion in their preferred language and videos were coded by bilingual research assistants.

Measures

Observed Adolescent Disclosure

Discussions were coded for adolescent disclosure using modified versions of the Couples Interaction Coding system (Marsh et al., 2002) and the Supportive Behavior Coding system (Allen et al., 2001). A conflict discussion was chosen as an ecologically valid measures of parent-adolescent communication processes (Eisenberg et al., 2008) and prior research has shown that this task elicits spontaneous disclosures (e.g., Main et al., 2019). Adolescent statements were coded as disclosures if the adolescent communicated something that the parent would not have automatically known and that would not necessarily come up in everyday conversation (Marsh et al., 2002) or that could have been kept secret (Allen et al., 2001; see Disla et al., 2019 for more details about the coding scheme). Adolescent statements were also coded as disclosures if the adolescent verbalized their inner states (i.e., statements that informed the parent about what they were feeling). Self-disclosure may be assessed by asking the question "did this person share personal information or did they disclose information that they could've kept secret?" For example, "Kids at school tease me about my diabetes" and "It's embarrassing when you bring up my diabetes in front of my friends" are statements that would be coded as disclosure. Each discussion was divided into adolescent and parent conversation turns. Each adolescent conversation turn was rated for whether disclosure occurred for that turn. The onset and offset time of each disclosure within each conversation was recorded to allow examination of temporal contingencies between adolescent disclosures and parent affective responses (see Data Setup and Analytic Plan).

Each conversation turn was treated as a new potential opportunity for disclosure; therefore, if a topic that had been discussed previously was later elaborated upon, this was coded as a separate instance of disclosure.

Codes were recorded using Mangold INTERACT (version 16). I trained two research assistants to reach 75% agreement on training videos over a 3-month period prior to the start of coding. Weekly calibration checks were held to discuss any disagreements and to minimize coder drift. Interrater reliability was calculated for agreement on the presence or absence of each disclosure within a 5-second window and was checked across 30% of the videos. Observers had very high agreement on the presence or absence of disclosures (97%). I served as the "gold standard" to which the other observers' codes were compared; thus, my codes were included in the final analyses for videos that were coded by two observers.

Parent Affective Responses to Disclosures

The videotaped discussions were coded by a team of two undergraduate research assistants trained by a graduate student researcher for parent affective responses using the Coding Expression of Emotion observational coding system (Thomson et al., 2018). This coding scheme captures parent's emotional expression in four different categories: positive affect, anger/ frustration, sadness/hurt, anxiety/ worry and parents' expressive suppression during the interaction. Positive affect consisted of conveying positive feelings to the partner including happiness, affection, joy, affiliative humor, enthusiasm, positive surprise, love, and satisfaction. Indicators included genuinely happy smiles with eye crinkles (i.e., the Duchenne smile; Ekman et al., 1990) slight smiles that express openness, warmth and caring, affection, cheerful tone of voice, and laughter and shared humor. Anger/frustration captured active and harsh emotions directed at/about the adolescent, the progress of the discussion, or others. Indicators included angry facial expressions (e.g., scowls, glaring, clenched teeth, domineering expressions), loud/raised and hostile voice tone, and aggressive displays. Sadness/hurt was coded as softer negative emotion including dejection, resignation, pessimism, and hopelessness. Indicators included sad facial expressions (e.g., lip corners pulled down, pouting, drooping eyelids, crying), sad posture (e.g., hanging head, shoulders drooping), and sad voice tone (e.g., slow, sad timbre, whiny tone, deep sighs). Anxiety/worry captured individuals' expressions of anxiety, nervous anticipation, fear or worry. Indicators included eyebrows pulling up and inwards, lip or cheek biting, nervous smiles/laughter, rapid eye movements, tapping fingers or legs/feet, fidgeting, frequent touching of the face, and speech disturbances (e.g., stammering). Expressive suppression was coded as the degree to which an individual was trying to control their expression of emotion, regardless of how successful these control attempts were or the degree to which they were expressing different emotions. Expressive suppression was indicated by attempts to conceal involuntary expressions might be present, such as covering the mouth, looking away or hiding one's face from the partner, clasping or sitting on their hands, tight closed mouth, biting lips, holding breath. To receive a higher score of expressive suppression, there is a basic sense that people are not breathing, blinking, swallowing, talking and moving as they would normally (i.e., non-consciously, automatically). Postures, body movements, facial and vocal expressions are likely to seem slightly unnatural or disjointed. Parents were also scored highly in expressive suppression when their verbal dialogue did not

match the emotion expressed, such as strongly complaining with a big smile and sweet voice or communicating they are very hurt with a flat, affective voice tone.

Similar training procedures to the disclosure coding described above were followed. Research assistants observed how parent's emotion was expressed and rated them by the frequency, duration and intensity of relevant facial expressions, voice tone/pitch, and non-verbal behavior (e.g., gestures, postures, and body movement) using a 1-7 Likert-type scale (low = 1-2, moderate = 3-5, high = 6-7). A graduate student researcher trained the undergraduate coders to reach 75% reliability across all codes and weekly meetings were held to discuss discrepancies in order to prevent coder drift. Intra-class correlation was used to calculate interrater reliability across 25% of the sample. The average intra-class coefficient for parent codes was 0.85 (range = 0.75 to 0.92), indicating good reliability.

Adolescent-Reported Disclosure to Parents

Adolescents completed a diabetes-specific disclosure scale disclosure that was developed and validated by Osborn et al., 2013. Adolescents reported on disclosure to mothers and fathers separately; the score for the parent that participated in the conflict discussion was used in the current study. Disclosure was measured with three items (e.g., "I spontaneously tell my [mother/father] about what is going on with my diabetes management, without [him/her] asking") and were rated on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale and averaged; higher scores reflect higher disclosure. Reliability in this sample was $\alpha = .79$.

HbA1c

Blood glucose was indexed using glycosylated hemoglobin (HbA1c) obtained from clinic records. HbA1c represents f the average blood glucose over the prior 2 or 3 months, with higher levels indicating higher blood sugars and worse glycemic control. The HbA1c value closest to the study appointment (M_{diff} = 25 days) was used in analyses.

Results

Data Setup and Analytic Plan

Data were analyzed using SPSS (version 24). Multilevel Generalized Linear Mixed-Effects modeling (GLMM) was used to test whether parent affective responses to adolescent disclosures predicted the lag time to subsequent disclosures. Behavioral coding of adolescent disclosure and parent affect resulted in two streams of data. Parents' time series consisted of 30-second epochs of affect ratings (positive, anger, sadness, anxiety, and suppression) on a scale of 1-7 and adolescents' time series consisted of a continuous stream of mutually exclusive states of disclosing or not disclosing (0 = no disclosure, 1 = disclosure). The dependent variable in all analyses was the lag time to subsequent adolescent disclosures in seconds. To identify lag times, first, each instance of disclosure for each adolescent was identified. Next, the number of seconds from the offset of the previous disclosure to the onset of the next disclosure was calculated. This procedure was repeated for each dyad until the last disclosure the adolescent made in the conversation. This resulted in a total of 1085 data points (see Disla et al., 2019 for a similar analytic approach in a parent-adolescent sample).

For each disclosure, the parent's affective response was identified as the difference between the parent's affect rating immediately following the disclosure and the parent's average rating for each affect type across the conversation. This approach

allowed me to capture whether and to what degree the parent's affect level for each affect code increased or decreased relative to the parent's general affective expressivity for each affect category while also allowing us to control for parents' overall (i.e., baseline) level of each affect type. Parent affective responses were binned into three levels: <1 standard deviation below the mean affect level (low), within one standard deviation of the mean (medium), and >1 standard deviation above the mean (high).

To examine whether increased or decreased parent affect in response to adolescent disclosures predicted shorter or longer lag times to subsequent adolescent disclosures, a multilevel generalized linear mixed model using a Poisson distribution was conducted with all affect categories included in a single model. Because the dependent variable (lag time) was a count variable whose distribution closely approximated that of a Poisson distribution both visually and numerically (Gardner et al., 1995), a Poisson distribution was considered appropriate. Using a multilevel modeling framework, family ID was used as a SUBJECTS variable to take into account the repeated nature of the independent (parent affective response) and dependent (disclosure lag times) variables for each dyad, and disclosure number was included as a REPEATED effect to account for dependencies between the timing of each adolescent disclosure and the previous disclosure(s). Parent affective responses were included in the model as fixed effects. Adolescent age and gender were included as covariates because prior literature has shown that girls are more likely to disclose than boys (Soenens et al., 2006) and adolescent disclosure declines with age (Keijsers et al., 2009). Adolescent self-reported disclosure to parents was also included as a covariate to control for adolescents' general tendency to disclose to parents. Higher family socioeconomic status was correlated with shorter lag times to subsequent disclosures, so this variable was also included as a covariate in the analyses.

Predicting Lag Time to Subsequent Adolescent Disclosures from Parent Affective Responses to Disclosures

Results of the model are presented in Table 1. The effect of each coefficient on the exponent of the predicted outcome can be interpreted as the difference in the effect size for each parent affective response at low (<1 standard deviation below the mean), medium (within one standard deviation of the mean), and high (>1 standard deviation above the mean) levels.

Consistent with hypotheses, when parents responded to adolescent disclosures with higher levels of anger relative to their average level of anger, adolescents took longer to disclose again. This effect was linear, with shorter lag times for low vs. medium (β = -4.10, p = .014), medium vs. high (β = -4.76, p = .046), and low vs. high (β = -8.86, p = .002). Also consistent with hypotheses, when parents responded to adolescent disclosures with lower suppression relative to average, adolescents took longer to disclose again, though this difference was only present when comparing low vs. medium levels (β = 6.18, p = .005) of suppression. In contrast to my hypothesis, adolescents took longer to disclose when parents responded with more positive affect, with adolescents taking longer to disclose when parents responded with medium vs. low (β = -7.81, p = .008) and high vs. low positive affect (β = -10.80, p = .006); there were no significant differences in medium vs. high (β = -2.99, p = .294). There were no significant differences in lag time to subsequent disclosures as a function of parent sadness or

anxiety. Figure 1 presents a visualization of adolescent lag times to subsequent disclosures as a function of parental affective responses.

Finally, adolescents from families with higher socioeconomic status disclosed again more quickly (β = -.32, p <.001), older adolescents took longer to disclose again (β = .08, p = .008), and females disclosed again more quickly than males (β = -.27, p = .026).

Interactions between Parent Affective Responses to Disclosures and HbA1c Predicting Lag Times to Subsequent Disclosures

To test my second aim of whether adolescent HbA1c moderated associations between parent affective responses to adolescent disclosures and lag time to subsequent disclosures, five separate GLMMs were conducted (one for each parent emotion type). HbA1c and each parent affective response were included as main effects, and the interaction terms between HbA1c and each parent affective response were included in the model (see Table 2). Socioeconomic status, adolescent age, gender, and adolescent-reported disclosure to parent were again included as covariates. The effect these interaction coefficients have on the exponent of the predicted outcome can be interpreted as the difference in the effect size for each parent affective response between high and low levels of the moderator.

Results indicated that there were main effects of HbA1c in all models on lag time to subsequent disclosures. Specifically, adolescents with lower HbA1c (indicating better glycemic control) generally disclosed again more quickly following their previous disclosure. There were also some significant interactions between HbA1c and parent affective responses to disclosures. Specifically, HbA1c significantly interacted with parent positive affect (β = -.34, p = .012), and parent anger (β = .27, p = .003). HbA1c did not significantly interact with parent sadness (β = .10, p = .515), anxiety (β = .06, p = .585), or suppression (β = .11, p = .304). Probing of the interactions between parent affective responses and adolescent HbA1c revealed that when parents responded to adolescent disclosures with anger, adolescents with higher HbA1c (i.e., worse glycemic control) were more likely to take longer to disclose again (see Figure 2A). The same pattern, though a smaller effect, was present for when parents responded to adolescent disclosure with positive affect (see Figure 2B).

Discussion

The current study examined whether parent affect in response to adolescent disclosure predicted the timing of subsequent disclosures, and whether these dynamics varied as a function of adolescent glycemic control (HbA1c) during parent-adolescent conversations. This study is innovative because it tested whether specific parental affective responses to adolescent disclosures in the moment predicted the timing of subsequent disclosures in a diverse, at-risk population. I found that when parents responded to adolescent disclosures with higher levels of anger and positive affect or with lower expressive suppression relative to their mean levels, adolescents took longer to disclose again. I also found that adolescents with lower HbA1c generally had shorter lag times to subsequent disclosures compared to adolescents with higher HbA1c and that the impact of parent affective responses on subsequent adolescent disclosures varied based on HbA1c. Specifically, when parents responded to disclosures with anger, adolescents with higher HbA1c had longer lag times to subsequent disclosures compared

to adolescents with lower HbA1c. Findings have implications for interventions aimed at promoting adolescent disclosure and positive aspects of parent-adolescent communication more broadly, particularly with families coping with chronic illness.

Associations Between Parent Affective Responses and Subsequent Adolescent Disclosures

As hypothesized, adolescents took longer to disclose when their parents responded to their previous disclosures with higher levels of anger relative to their baseline. Adolescents may have taken longer to disclose to their parent after their parent responded with anger because they attributed the increased anger to their disclosure and feared potential behavioral and/or emotional consequences in response to further disclosures. Indeed, adolescents often cite this fear as a reason for nondisclosure to parents (Smetana et al., 2009). This finding is consistent with previous research on adolescent disclosure using self-report which have linked negative parental reactions, such as anger, to reductions in adolescent disclosure over time (Tilton-Weaver et al., 2010). My results indicate that similar dynamics can be observed in real-time parent-adolescent interactions in matters of seconds. Importantly, the present findings reflect the effect of specific parental affective responses to adolescent disclosures in the moment, rather than global features of parent-adolescent conversations or negative affect more broadly as demonstrated in prior research (Disla et al., 2019; Main et al., 2019).

Somewhat surprisingly, adolescents also took longer to disclose when parents responded with increased positive affect to their previous disclosures. It is possible that adolescents perceived increases in parental positive affect immediately following a disclosure as not taking their feelings or the content of what they were disclosing seriously, leading to less disclosure over time. It is also possible that when parents responded to adolescent disclosures with positive affect, this communicated approval of the content of their disclosure, which may have the (likely unintended) effect of subtly discouraging adolescents from disclosing something in the future about which the parent may disapprove. It is important to note that positive affect was coded as general positive emotion (e.g., humor, joy, affection). Disla et al. (2019) found that positive emotion-related behaviors conveying validation and interest were associated with quicker subsequent disclosures during mother-adolescent conflict discussions, whereas positive affect more broadly (which mainly consisted of humor, affection, and enthusiasm) was associated with longer lag times to subsequent disclosures. Although humor, affection, validation, and interest are generally positive features of parent-adolescent interactions, during conflict discussions these emotional responses may serve different functions. For example, the use of humor within this context may convey a lack of seriousness or appreciation for the other person’s perspective. As with negative emotion, this finding indicates the importance of examining discrete positive affective responses to disclosures.

When parents responded to adolescent disclosures with higher expressive suppression relative to their average, adolescents disclosed again more quickly in the conversations. This suggests that adolescents are more willing to disclose when parents do not openly express their emotions (i.e., when parents displayed low vs. medium levels of parental suppression). This is consistent with recent research with adults finding that expressive suppression during interpersonal interactions had detrimental effects on partners’ outcomes (relationship satisfaction, perceived discussion outcomes) only at high

(rather than low or moderate) levels of expressive suppression (Girme et al., 2021), suggesting that some level of suppression is appropriate in interpersonal interactions. This finding is also consistent with research in the parent-child interaction literature underscoring the importance of parents' emotions matching the context and too weak or too strong relative to relationship and task demands (Dix, 1991; Van der Giessen & Bögels, 2018). Further research examining the content of adolescent disclosures and variations in how parents respond to such disclosures in the context of managing chronic illness is needed to further untangle these complex dynamics.

The Role of HbA1c

The impact of parental affective responses on the timing of future adolescent disclosures varied as a function of adolescents' diabetes management. Specifically, adolescents with lower (meeting or closer to target) HbA1c generally disclosed again more quickly following their previous disclosure. Adolescents with better glycemic control have been found to view their parents' monitoring attempts in a positive manner (Leonard et al., 2005). Therefore, it is possible that adolescents with lower HbA1c were also viewing the conversations with their parents in a more positive light then those with higher HbA1c.

Additionally, when parents responded to adolescent disclosures with anger, adolescents with higher HbA1c generally took longer to disclose again. This finding is in line with previous research conducted using self-report which found that greater levels of negative emotion, such as anger, were linked to poorer adolescent glycemic control (Martin et al., 1998). Because the adolescents' HbA1c value was derived from the clinic appointment closest to the family's study visit, adolescents whose diabetes was more poorly controlled at the time of participation in the study may have disclosed less when parents responded with anger because they were trying to avoid further conflict with their parent. An important area of future research would be to follow up with families over time to see whether adolescents that engaged in greater disclosure to parents experienced declines in HbA1c relative to those who did not disclose much.

Though the effect was weaker, a similar effect was observed when parents responded to adolescent disclosures with relatively greater positive affect. Once again, adolescents with higher HbA1c may have been more sensitive to a perceived lack of seriousness on the part of the parent in response to their disclosures. Alternatively, if parents do not take adolescents' concerns about their diabetes seriously, this could be associated with less parental involvement and support regarding their adolescent's diabetes management, resulting in worsening HbA1c over time. Indeed, there is a large body of literature indicating that parental involvement in their child's diabetes management remains important in adolescence (Berg et al. 2017).

Limitations and Future Directions

Though the study is innovative in its use of observational methodology to test dynamic, micro-level associations between adolescent and parent behavior in a diverse, at-risk population, there are several limitations that warrant mentioning. First, despite the richness of the timing data within the parent-adolescent interactions, the cross-sectional nature of the study precludes testing associations between parent affective responses, adolescent disclosure, and physical health over longer timescales (e.g., developmentally over months or years). Assessments of trends in diabetes management longitudinally

would provide a greater understanding of links between parental responses, disclosure, and health over time. Second, though the sample size was large compared to other observational studies with samples with type 1 diabetes and the large number of within-subjects observations is a significant strength, some of my between-subjects analyses may have been underpowered to detect differences. Though the diversity of the sample is a strength, explicit examination of links between cultural factors (e.g., language, cultural values) and family dynamics in the context of type 1 diabetes management is an important future direction. Finally, though both mothers and fathers were included in the study, the majority of participants were mothers because mothers are most likely to be involved in their adolescents' diabetes care (Quittner et al., 1998). Oversampling of fathers would allow for testing differences in response dynamics between mothers and fathers.

Conclusions and Implications

This study sheds light on the ways in which parent affective responses to adolescent disclosure in the context of managing type 1 diabetes influence real-time adolescent disclosure to parents about their diabetes, and how these dynamics are linked with physical health (HbA1c) in this population. The observational methodology and use of dynamic statistical techniques will facilitate targeted interventions with parents and adolescents managing type 1 diabetes and potentially other chronic illnesses. Specifically, parents can be encouraged to focus on regulating their emotions, particularly anger, in the context of discussing diabetes-related issues with their adolescent. This is especially important if adolescents are already having difficulty managing their diabetes. Thus, clinicians should pay particular attention to sharing information about positive parent-adolescent dynamics in families in which the adolescent has higher HbA1c. Developing interventions and building on existing interventions (e.g., Graves et al., 2015) that emphasize interpersonal aspects of managing emotions in the context of diabetes management is important to promote positive health outcomes in this population.

Chapter 4: Associations Between Early-Adolescent Disclosure, Early Cultural Factors, and Social Behaviors among Racially Diverse Families from Low Socioeconomic Status Backgrounds

The results of Chapter 3 indicate that adolescent disclosure holds important implications for adolescent health. Chapter 3 utilized a sample consisting of mostly Latinx families and therefore racial/ethnic differences in observed disclosure was not examined. It is unclear whether observed disclosure to parents or whether the associations between observed disclosure and positive social adolescent behaviors vary among ethnic groups. To this end, study 3 explores whether adolescent disclosure varies across different ethnic groups (African American, Mexican American, and European American), whether early cultural factors (generational status and language use) are prospectively associated with Mexican American adolescent observed disclosure to parents, and whether observed disclosure within these groups is associated with social behaviors (e.g., self-control, cooperation, externalizing behaviors, and hyperactivity) using a sample of ethnically diverse families from low socioeconomic status (SES) backgrounds. It is important to examine adolescent disclosure and parent-adolescent relationships dynamics within families from low SES backgrounds because low SES has previously been associated with a variety of parent and child outcomes, including harsher parental discipline, less vigilant parenting, less consistent with disciplining practices, less parent-child communication, and greater child externalizing behavioral problems (Collins & Laursen, 2004; Bradley & Corwyn, 2002; Elder et al., 1985; McLoyd, 1998; Smetana et al., 2002).

Cultural Context of Disclosure

The cultural context of a family shapes both parental and children's behaviors. Much of the literature has examined adolescents' disclosure about their activities to parents within European or European American families (Rote et al., 2012; Van der Giessen et al., 2014; Waizenhofer et al., 2004). However, a few recent studies, using primarily self-report measures, have begun to examine disclosure among adolescents from more diverse cultural populations (e.g., Latinx adolescents; Villalobos et al., 2012). Research conducted using diverse cultural samples has found cultural differences in the frequency of disclosure. For example, Jeffries (2004) found that African American and Latino boys frequently reported disclosing private information to their parents whereas Asian American boys never did. There have also been cultural differences found when examining the content that adolescents disclose to their parents. For example, Yau et al. (2009) found that Mexican American youth were more reluctant to disclose their prudential behavior (i.e., issues pertaining to adolescents' health, safety, comfort, or harm to the self) to parents than were European American adolescents. They also found that Mexican and European American teens disclosed more about multifaceted issues (i.e., issues that overlap the personal and either conventional or prudential domains (e.g., watching R-rated movies) than did youth of Chinese descent. When examining underrepresented racial/ethnic groups, culturally specific factors (e.g., cultural attitudes, cultural values, and family structures) may contribute to ethnic differences found in adolescent disclosure. For example, Villalobos and Smetana (2012) found that Puerto Rican teens' greater adherence to Latinx family values and trust in parents were

associated with more disclosure to mothers. Compared to European American families, Latinx and Asian families are more hierarchical (Harwood et al., 2002; Chao & Tseng, 2002) and are seen as more controlling (Bulcroft et al., 1996; Halgunseth et al., 2006). In these families, adolescents feel that obligations to assist and support the family, as well as family harmony, are important (Chao & Tseng 2002; Harwood et al., 2002; Fuligni et al., 1999).

Acculturation is another important aspect of the cultural context that is important to consider within immigrant populations (e.g., Latinx, Asian) as it may contribute to adolescent disclosure to parents. Acculturation refers to changes in cultural behaviors, values, beliefs, and attitudes resulting from continued intercultural contact between individuals and/or groups (Sam & Berry, 2010; Schwartz et al., 2010). Many scholars have noted that the acculturation process can be stressful for families, especially when the rate of acculturation to the mainstream culture occurs at different rates, with children typically acculturating more quickly than their parents (Szapocznik & Kurtines, 1993). One study specifically studied the effects of differences in parent-child acculturation and found that Latinx children with higher levels of acculturation than their parents reported lower levels of parental involvement (Dinh et al., 2002). Previous research has utilized generational status as a proxy for acculturation (Crockett et al., 2007) because later generations of immigrants have been found to be more likely to adopt American values compared to earlier generations. Specifically, previous research has found that later generations of adolescents endorse family obligation and interdependence less than earlier generations (Phinney et al., 2000). Chao (2001) suggests that, compared to first generation adolescents, second-generation adolescents experience a larger acculturation gap with their parents which leads to less emotional closeness. Acculturation may therefore impact adolescent disclosure to parents within immigrant populations due to differing cultural values or attitudes which may lead to decreased parent-adolescent relationship quality.

Another aspect of acculturation that is important to consider when examining adolescent disclosure to parents in immigrant populations is the presence of language gaps (e.g., when the parents' primary language is not the same as the child's primary language). Previous research has found that immigrants and their children are frequently not proficient in a common language typically because children master the new language faster than their parents do (Schofield et al., 2017). For example, Portes and Rumbaut (2001) found that almost no first-generation Latinx parents could be considered fluent in English and no second-generation youth could be considered fluent in Spanish. Parents and children who do not share fluency will often experience dissonant acculturation (Schofield et al., 2012). This differential family acculturation often interferes with effective communication and problem solving among all family members (Pease-Alvarez, 2002; Martinez, 2006). Language gaps have previously been associated with lower levels of parent-adolescent communication about sensitive topics and with less observed parent-adolescent communication in general (Schofield et al., 2017). Some children, particularly if they were born in the U.S. or immigrated to the U.S. at a young age, may not have sufficient Spanish language skills and have parents who have not developed sufficient English language skills to communicate effectively with them (Rumbaut, 1994). Therefore, in some Mexican American families, parents may speak

Spanish to their adolescents, but their adolescents may respond in English. Conversely, parents may adopt English for specific types of communication to their children and use Spanish for other types of communication (e.g., emotionally laden communication) as has been found in Chinese American immigrant families (see Chen et al., 2012). Collectively, these findings highlight that both the frequency of disclosure and the factors that influence disclosure may vary based on the cultural group being examined.

Adolescent Disclosure and Positive Adjustment

Deviant behavior has been found to be particularly high among children during adolescence (see Dodge et al., 2006). During this time, children are also at risk academically typically due to a decline in adolescent interest, engagement, and achievement in school (Fredricks & Eccles, 2002; Kenney-Benson et al., 2006). Studies have shown that both parental support and monitoring are associated with positive outcomes among adolescents, including higher school grades, fewer behavior problems, less substance use, better mental health, greater social competence, and more positive self-concepts (Jackson et al.,1998; Pratt et al., 1992; Amato & Fowler, 2002). However, over the last decade more attention has been given to the role of adolescent disclosure to parents in predicting adjustment outcomes (see Kerr & Stattin, 2003; Smetana, 2009; Laird et al., 2013). Over this time, research has consistently found that self-reported adolescent disclosure to parents predicted reduced deviant behavior (i.e., aggression & delinquency) among adolescents over and above parents' monitoring of their behavior (Stattin & Kerr, 2000; Keijers et al., 2009). The parental knowledge gained through adolescent disclosure has been argued to inhibit deviant behavior among adolescents because it allows parents to steer their kids away from situations providing opportunities delinquency as well as other risky endeavors (Soenens et al., 2006; Stattin & Kerr, 2000). Greater disclosure to parents is associated with better quality adolescent-parent relationships, including greater parental acceptance, responsiveness, and trust (Kerr & Stattin, 2000; Smetana et al., 2006). However, much of this work has relied on self-reported disclosure, therefore it remains unclear how observed disclosure to parents predicts adjustment in diverse families. Given that patterns of parent-child relationships (Ebbert et al., 2019) and deviant behavior (Patterson & Dishion, 1985) typically emerge prior to adolescence, it is important to examine these processes in early adolescence in order to inform interventions aimed at promoting disclosure to parents during this important developmental period.

The Present Study

The present study used a mixed-methods approach to examine (1) whether observed early-adolescent disclosure (ages 10 & 11) varies across different ethnic groups (African American, Mexican American, and European American), (2) whether early cultural factors (acculturation, generation status, and language use) are prospectively associated with Mexican American adolescent observed disclosure to parents, and (3) whether observed disclosure is associated with social behaviors within a sample of families from low socioeconomic status backgrounds. Specifically, I will examine whether cultural variables reported by Mexican American mothers when their child was approximately 25 months old are prospectively associated with disclosure to parents when the child was in fifth grade. Lastly, I will examine whether adolescent disclosure is associated with adolescent social behaviors (self-control, cooperation, externalizing

behaviors, and hyperactivity) (a) across the entire sample and (b) within each ethnic group. Based on prior research (e.g., Yau et al., 2009), I hypothesize that 1) disclosure will be lowest among the Mexican American group compared to the other ethnic groups, 2) that both higher levels of acculturation and English language use for mothers will be prospectively associated with greater levels of observed disclosure within the Mexican American group, and 3) that adolescent disclosure will be associated with positive adolescent social behaviors (i.e., both greater self-control and cooperation as well as lower externalizing and hyperactivity behaviors) across the ethnic groups. Due to the lack of research in this area, I do not have any specific predictions about the strength of these associations across ethnic groups.

Methods

Participants

This study utilizes data from a study consisting of 3,001 mothers and children enrolled in the Early Head Start Research and Evaluation Project (EHSREP) (Administration on Children, Youth, and Families, 2001). Participants had family incomes at or below the federal poverty level, which was a requirement for eligibility for Early Head Start services. At study enrollment, participants were randomly assigned to receive Early Head Start services or to a comparison group. Families in the comparison group had the option to access other community services. Data were collected from 17 sites across the United States, with urban and rural locations represented. The current study will utilize data collected from the second wave (when children were approximately 25 months old) and the fifth wave (when children were in grade 5) of the study. IRB approval was obtained from the institutions where the original study was conducted. The current study involved secondary analysis of de-identified data collected as part of EHSREP, and therefore did not require IRB review at the institution of the author.

The present sample is restricted to 450 randomly selected families that participated in the videotaped interaction portion of the larger study (150 European American families; 150 African American families, and 150 Mexican American families). The only requirement for selection into the current study was that participants had to have data from 3 home visits (conducted at 24 months, 36 months, and grade 5). Five families were missing cultural data and were therefore removed from the current sample. Mothers' average age at the fifth wave was 34.07 years (SD = 6.01, range = 24-54). At the fifth wave, 68 (21%) of the mothers had not completed high school, 81 (25.1%) of the mothers had high school diplomas or Ged certificates, 30 (9.3%) had post-high school vocational school, 58 (18%) had attended some college, 33 (10.2%) had an associate degree, and 33 (10.1%) had a bachelor's degree or above. 234 (72.4%) mothers reported being employed and 138 (43.4%) reported household incomes of $25,000 or less at the fifth wave.

Procedures

Demographic information was collected from mothers upon enrollment in the EHSREP between July 1996 and September 1998. At the time of application to Early Head Start and during telephone interviews about 16 months after application, demographic data and information on economic risk were collected. Home visits were

conducted when children were 24 months old, 36 months old, pre-kindergarten, and when children were in fifth grade.

During the 5th-grade wave, collected from 2007-2009, mother-child dyads were videotaped while trying to resolve three areas of disagreement. Mothers and children were given 15 cue cards, each naming a common area of parent-child disagreement (e.g., homework, chores). Dyads were asked to pick three topics that were especially challenging for them and to attempt to resolve their issues in 8 minutes. The task was based on the Parent-Child Discussion Task from the 5th-grade wave of the National Institute of Child Health and Human Development's (NICHD) Study of Early Child Care and Youth Development (Early Child Care Research Network, 1993).

Measures

Demographics. Mothers' self-identified their race/ethnicity, primary spoken language, age, adults in the household, child age, and child gender at the time of application to the EHSREP. Child sex and birth date were also obtained during the application interview for children who had already been born, and at a later data collection time if the mother was pregnant at enrollment. At wave 5, mothers reported highest education completed and total household income in the past year. Racial/ethnic groups were dummy coded as 1 = European American, 2 = African American, and 3 = Hispanic. The Mexican American subsample was also divided by language when creating cultural groups. Cultural groups were then dummy coded as 1=European American, 2= African American, 3= English-speaking Mexican American, and 4= Spanish-speaking Mexican American.

Cultural Measures. Mothers from the Mexican American families completed eight items from the Multicultural Acculturation Scale (Wong-Rieger & Quintana, 1987), administered as part of the interview conducted when children were approximately 25-months-old (Ispa et al., 2004). These items assess generational status and language usage. Generational status was scored 1 for mothers born in Mexico, 1.5 for mothers born in the United States of Mexican-born parents, or 2 for mothers born in the United States of U.S.-born parents. The language spoken at home was scored 1 for Spanish and 2 for English. Three items assessing the extent to which mothers spoke English in childhood, spoke English currently, and currently read in English were given scores of 1 if mothers indicated they never used English, used it only when necessary, or used it about half the time. Scores of 2 were given to responses indicating that mothers used English most or all of the time. The five scores (generational status, language spoken at home, spoke English in childhood, spoke English currently, and currently reading in English) were summed to produce an acculturation index (Cronbach's a = .89; see Ispa et al., 2004). In addition to examining acculturation as recommended by Ispa et al. (2004), both language spoken at home and generational status were also separately examined to address methodological concerns around unidimensional acculturation assessments and ascertain what aspect of acculturation relates to disclosure (see Iwamasa et al., 2013).

Early Adolescent Social Behaviors. To assess adolescent social behaviors, 5th grade teachers completed subsections of the Social Skills Rating System (SSRS; Gresham & Elliott, 1990). The SSRS is used to measure the perceived frequency of behaviors influencing the child's development of social competence and adaptive functioning. Teachers completed the Cooperation (10 items) and Self-Control (10 items)

social skills subscales (Social Skills subscales alpha range = .93-.94). The cooperation subscale assesses behaviors facilitating academic performance and success such as sharing materials and following rules. The self-control subscale assesses behaviors that typically emerge in conflict situations, such as responding appropriately to teasing, and in non-conflict situations that require taking turns and compromising. Teachers also completed the Externalizing behaviors (6 items) and Hyperactivity (6 items) Problem Behavior subscales (Cronbach's a for Problem Behavior subscales alpha range = .82-.86). The externalizing subscale assesses behaviors representing under controlled or acting-out behavioral patterns, such as fighting or bullying. The hyperactivity subscale assesses behaviors representing inattention, impulsivity, and overactivity, such as interrupting others and moving excessively. The SSRS utilizes a three-point rating scale to rate the perceived frequency of social behaviors ranging from 0 to 2: 0 = "never occurs," 1 = "sometimes occurs" and 2 = "occurs very often".

Observed Early-Adolescent Disclosure. Parent–adolescent conflict discussions were coded for adolescent disclosures using modified versions of the Couples Interaction Coding (Marsh, Busch, Cowan, & Cowan, 2002) and the Supportive Behavior Coding systems (Allen et al., 2001). Adolescent statements were coded as disclosures if the adolescent communicated something that the parent would not have automatically known, that would not necessarily come up in everyday conversation (Marsh, Busch, Cowan, & Cowan, 2002), or that could have been kept secret (Allen et al., 2001). For example, 'I'm annoyed with my sister for picking on me' or 'Dad doesn't want to talk to me' would be coded as instances of disclosure. Each discussion was assigned a global disclosure score. Therefore, frequency and depth of the disclosures were considered when assigning the rating. Global disclosure ratings ranged from 0.5 (brief statements about a specific topic relating to self or 1-2 statements about internal states where feelings are more implied) to 4 (frequent occurrences of statements similar to a "3" rating; see Appendix B).

Codes were recorded using Microsoft Excel. The lead author trained 4 undergraduate research assistants to reach 75% agreement on training videos over a two-month period prior to the start of coding. Weekly calibration checks were held to discuss any disagreements and minimize coder drift. Interrater reliability was calculated for agreement on the disclosure ratings and was checked across 30% of the videos. The correlation coefficient for the global disclosure ratings between coders ranged from 0.76-0.93. The average correlation coefficient between coders was 0.85.

Results

Data setup and Analytical Plan

All analyses were conducted using SPSS version 27. To address aim 1, a one-way ANOVA was conducted in order to examine whether early-adolescent disclosure varied across different ethnic groups (African American, Mexican American, and European American). To address aim 2, first, bivariate correlations among cultural factors and adolescent disclosure were conducted utilizing the Mexican American subsample to examine whether early cultural factors (acculturation, generation status, and language use) are prospectively associated with Mexican American adolescent observed disclosure to parents. Second, hierarchical multiple regression was utilized to examine whether acculturation was associated to observed adolescent disclosure above and beyond the

impact of maternal age. In addition, an ANCOVA was also utilized to examine whether English spoken in the home was associated to observed disclosure above and beyond the impact of maternal age. Maternal age was included as a covariate because it has been found to influence parental role performance and should therefore be accounted for in studies of mother-child outcomes (Ragozin et al., 1982) and because there was a negative correlation between disclosure and maternal age for the Mexican American subsample, $r(148) = -.26$, $p = .00$. There were no significant associations between disclosure and the other demographic variables. I found no significant correlation between disclosure and highest education completed, $r(144) = .13$, $p = .11$, or household, $r(138) = -.02$, $p = .86$, or child age at enrollment, $r(138) = -.09$, $p = .30$. There was also no significant effect for child gender, $t(148) = 1.38$, $p = .17$, despite Mexican American females ($M = .78$, $SD = 1.01$) engaging in higher levels of disclosure than Mexican American males ($M = .59$, $SD = .68$). There was also no significant effect for household income, $t(147) = 1.54$, $p = .13$, despite higher income Mexican American families ($M = .77$, $SD = .56$) engaging in higher levels of disclosure than lower income Mexican American families ($M = .56$, $SD = .75$). Lastly, a one-way ANCOVA was conducted to assess whether disclosure varied among each of the cultural groups (e.g., Spanish-speaking Mexican American, English-Speaking Mexican American, European American, and African American). Maternal age was included as a covariate. To address aim 3, four hierarchical multiple regressions were conducted with adolescent disclosure as a predictor of adolescent social behavior in order to examine whether observed disclosure is associated with social behaviors within a sample of families from low socioeconomic status backgrounds. I controlled for maternal age and child sex in each regression model because prior research has shown that the development of both social skills and problem behaviors often differs by gender (i.e., Margetts, 2005; Keane & Calkins, 2004; Abdi, 2010).

Preliminary Results

Child gender was also associated with disclosure and each social behavior variable across the entire sample. Specifically, females engaged in higher levels of disclosure ($M = 0.88$, $SD = 0.90$) than males ($M = 0.70$, $SD = 0.75$), $t(448) = 2.30$, $p = 0.02$. There were also sex differences in teacher-reported social behaviors. Specifically, females received higher average scores in cooperation ($M = 1.56$, $SD = 0.41$) than males ($M = 1.31$, $SD = 0.43$), $t(228) = 4.56$, $p < .001$. Females received higher average scores in self-control ($M = 1.56$, $SD = 0.44$) than males ($M = 1.38$, $SD = 0.52$), $t(222) = 2.78$, $p = 0.01$. Males received higher average scores in externalizing behaviors ($M = 0.50$, $SD = 0.52$) than females ($M = 0.32$, $SD = 0.42$), $t(224) = -2.74$, $p = .01$. Males received higher average scores in hyperactivity ($M = 0.85$, $SD = 0.57$) than females ($M = 0.53$, $SD = 0.51$), $t(229) = -4.47$, $p = 0.00$.

Differences Across Ethnic Groups in Disclosure

Descriptive statistics of the full sample and for each ethnic group separately are presented in Table 1. To determine whether there was a statistically significant difference between African American, Mexican American, and European American adolescents' levels of disclosure, a one-way ANOVA was conducted. Results showed that there was a significant effect of ethnic group on disclosure, $F(2, 447) = 3.65$, $p = 0.03$. Post hoc comparisons using the Tukey HSD test indicated that disclosure among Mexican American adolescents ($M = .68$, $SD = .85$) was significantly lower than disclosure among

African American adolescents (*M* = .93, *SD* = .79). However, disclosure among European American adolescents (*M*= .76, *SD* = .84) did not significantly differ from Mexican American or African American adolescents (see Figure 1).

Associations between Early Cultural Factors and Adolescent Disclosure

To determine whether early cultural factors are prospectively associated with Mexican American adolescent observed disclosure to parents, correlations were conducted between observed disclosure, acculturation, English spoken in the home, Spanish spoken in the home, and generational status using the Mexican American subsample (see Table 2). Results showed that observed adolescent disclosure was positively correlated with both acculturation and speaking English at home. In addition, each of the early cultural factors were also correlated with each other. Based on these findings, I first examined the relationship between acculturation and disclosure. Hierarchical multiple regressions controlling for maternal age revealed no statistically significant differences in disclosure as a function of acculturation (see Table 3). To examine the association between English spoken in the home and adolescent disclosure, a one-way ANCOVA was conducted. Results showed that there was a significant effect of speaking English at home on Mexican American adolescent disclosure after controlling for maternal age (see Figure 2), $F(1,141) = 5.31$, $p = 0.02$. Due to the significant relationship between language use and disclosure, I re-ran the analyses dividing up the Mexican American sample by language. Results showed that there was a significant effect for cultural group on disclosure, $F(3, 444) = 5.82$, $p = 0.00$. Specifically, post hoc comparisons using the Tukey HSD test indicated that the mean score for adolescent disclosure among the Mexican American dyads whose mothers predominately spoke Spanish *(M* = 0.47, *SD* =0 .74) was significantly different than both the Mexican American dyads whose mothers spoke predominately English (*M* = 0.91, *SD* = 0.91) and the African American dyads (*M* = 0.93, *SD* = 79; see Figure 3). However, adolescent disclosure among the Mexican American dyads whose mother predominately spoke English did not significantly differ from the African American dyads or European American dyads (*M* = .76, *SD* = 0.84). In addition, European American dyads did not significantly differ from African American dyads.

Associations between Adolescent Disclosure and Social Behaviors

To examine whether observed disclosure within this population was associated with social behaviors, correlations between disclosure and each social behavior variable (hyperactivity, cooperation, externalizing behaviors, and self-control) were conducted across the full sample. There were no significant associations between disclosure and any of the social behaviors. To examine whether observed disclosure was associated with positive social behaviors differently across the ethnic groups, four hierarchical multiple regressions were conducted (see Table 5). For all regressions, in Step 1, the covariates (maternal age and child sex) were entered. In Step 2, adolescent disclosure and ethnic group were entered. In Step 3, the interaction between ethnic group and adolescent disclosure was entered, allowing me to examine its unique association with each outcome. Contrary to my hypothesis, there were no significant associations between any of the social behaviors and disclosure among the ethnic groups. I repeated these analyses using cultural groups in the models in place of ethnic groups (see Table 4). However,

there were no significant associations between any of the social behaviors and disclosure among the cultural groups.

Discussion

The current study built upon previous findings by examining observed disclosure among early adolescents (ages 10 & 11) across different ethnic groups (African American, Mexican American, and European American) within a sample of families from low SES backgrounds. Examining adolescent disclosure within families from low SES backgrounds is important because SES has been shown to impact parent-adolescent communication and relationships. The study also examined associations between observed adolescent disclosure, early cultural factors, and social behaviors. I found that Mexican American adolescents engaged in significantly lower levels of disclosure compared to African American adolescents. I also found that speaking English in the home when the child was 25 months was positively prospectively associated with adolescent disclosure in Grade 5. Furthermore, in Mexican American dyads where parents spoke predominantly in Spanish, adolescents engaged in significantly lower levels of disclosure compared to both Mexican American dyads where mothers spoke predominantly in English and African American adolescents. No significant associations between observed adolescent disclosure and social behaviors, after controlling for maternal age and child gender, were found. Findings have implications for studying adolescent disclosure in underrepresented families from low socioeconomic status backgrounds.

Ethnic Differences, Early Cultural Factors, and Adolescent Disclosure

I found partial support for my hypothesis that disclosure would be lowest among the Mexican American group compared to the other ethnic groups. Results revealed that Mexican American adolescents engaged in significantly lower levels of disclosure to parents compared to African American adolescents. Although Mexican American adolescents also did not engage in significantly lower levels of disclosure compared to European American adolescents, mean levels of disclosure were lower in the Mexican American group compared with the European American group. African American adolescents had the highest levels of disclosure compared to Mexican American and European American adolescents. However, the mean difference between African American and European American adolescents was not statistically significant. This finding is in line with previous research, using self-report, which has found differences in the reported frequency of disclosure depending on adolescent ethnicity (e.g., Yau et al., 2009; Smetana et al., 2009). African American and Mexican American families have previously been described as more cohesive and interdependent when compared to European American families (e.g., Falicov, 1996; Garcia-Prieto, 1996) and family cohesion has been found to be positively associated with adolescent emotional disclosure to parents (Papini et al., 1990). This family dynamic may explain why African American adolescents engaged in significantly higher levels of disclosure to parents. However, Mexican American families may face unique challenges in communication that African American and European Americans do not which may explain why Mexican American adolescents engaged in significantly lower levels of disclosure.

Findings also demonstrated that both acculturation levels and English spoken in the home when the child was 25 months were correlated with adolescent Mexican American

disclosure. However, after controlling for maternal age, only speaking English in the home remained significantly associated with observed adolescent disclosure. Specifically, adolescents whose parent spoke English in the home at 24 months engaged in higher levels of disclosure to parents in fifth grade. Results also revealed that in Mexican American dyads where mothers spoke predominately in Spanish, adolescents engaged in significantly lower levels of disclosure compared to both African American and Mexican American dyads where mothers spoke predominately in English. It is likely that families who spoke Spanish in the home when the child was 24 months later faced communication issues (i.e., language gaps) as their child was acculturating and learning English through schooling. Portes & Rumbart (2001) previously found that children of immigrants rarely become proficient in their heritage language. In addition, research has found that Mexican American families often experience acculturation and language gaps because their children acculturate to the US culture much more quickly than their parents do (Bacallao & Smokowski, 2009). This language discrepancy has previously been associated with compromised family functioning including poor communication and lack of parental involvement (e.g., Martinez, 2006; Unger et al., 2009). An important area of future research would be to assess Spanish-speaking Mexican American family language proficiencies over time to determine when and why language discrepancies impact disclosure to parents. These findings underscore the importance of examining acculturation metrics separately.

Associations between Adolescent Disclosure and Positive Social Behaviors

Surprisingly, and inconsistent with prior research using self-report, early adolescent disclosure was not associated with adolescent social behaviors (i.e., greater self-control and cooperation or lower externalizing and hyperactivity behaviors) across the full sample or within ethnic groups. This finding is consistent with a study conducted by Chaparro et al. (2015) which examined associations between adolescents' self-reported intention to disclose and prosocial behavior (e.g., helpfulness) in the classroom. This study did not find any significant association between adolescents' intention to disclose and teacher reports of prosocial behaviors. However, they did find associations between adolescents' intention to disclose to their mothers and mother-reported adolescent prosocial tendencies. Therefore, the lack of association between early adolescent disclosure and positive social behaviors could be due to a variety of reasons. First, it is possible that adolescent disclosure to mothers may be correlated with parental reports of positive social behaviors and not teacher reports, such as those used in the current study. It is also possible that adolescent disclosure to mothers may not be associated with the specific social behaviors that were measured in the current study. It is possible that early adolescent disclosure to parents is instead associated with higher self-esteem, lower levels of depressed mood, and/or better school performance as has been found with older adolescents (Darling et al., 2006). Alternatively, it is also possible that disclosure to parents during early-adolescence may be prospectively associated with adjustment behaviors later in development. Indeed, previous research has found deficient parent-child communication to be a factor for future aggressive behaviors of male adolescents in low–socioeconomic status (SES) localities (Loeber, 2001).

Limitations and Future Directions

Despite several strengths of the study, including its innovative use of observational methodology to examine adolescent disclosure, longitudinal design, the

relatively large sample size, and the focus on racially/ethnically diverse families from low socioeconomic status backgrounds, there are several limitations that suggest directions for future research. First, although I was able to examine early cultural factors, I did not have measure of these cultural factors at later timepoints. Although generational status does not change over time, it is possible that English language use in the home changed over time for Spanish-speaking Mexican American families. In addition, observed adolescent disclosure and adolescent social behaviors were only measured at one time point. Assessments of trends in language proficiency and social behaviors would provide greater understanding of the link between disclosure, social behaviors, and language gaps over time. Second, the dataset I utilized only collected information about early cultural factors for the Mexican American families. Therefore, I was unable to assess whether culturally relevant factors (e.g., values/beliefs) were associated with disclosure for African American or White adolescents. Examining associations between African American cultural value and beliefs in particular and observed adolescent disclosure to parents is an important future direction. Finally, the current study utilized data that was collected from 1996-1998, therefore, there is a possibility that my findings may not generalize to families in the present. For example, there have been major advances in technology since this dataset was collected and these advances may have impacted the way that adolescents manage information to which their parents have access. Future research should study these associations and processes using a more current dataset.

Conclusions and Implications

Despite its limitations, the results of this study highlights differences in adolescent disclosure among underrepresented ethnic groups and on the prospective impact of early cultural factors in Mexican American families. Adolescent disclosure is an important tool for both parental knowledge as well as positive adolescent outcomes. Results from the current study suggest how early language cultural factors (e.g., language) may impact adolescent disclosure to parents. Specifically, Mexican American families from low socioeconomic backgrounds may be facing unique challenges in communication due to potential acculturation gaps (e.g., language gaps) and could therefore benefit from early language interventions to help reduce later potential language proficiency gaps. This would be especially important for newly immigrated and/or less acculturated Mexican American families.

Chapter 5: General Conclusions

In the early 2000s, Stattin & Kerr (2000) demonstrated that researchers had been measuring parental monitoring primarily with questions assessing parental knowledge of adolescent behaviors. It was later demonstrated that parental knowledge was mainly garnered from adolescent voluntary disclosure of information instead of parental monitoring strategies (Kerr et al., 2010). This led to an increase in research examining aspects of adolescent disclosure to parents. Studies using primarily self-report have found both concurrent and prospective associations among parental behaviors that are associated with adolescent disclosure. Due to this methodology researchers had been unable to observe parent-adolescent interactions in real-time, in order to determine what parental behaviors directly inhibit or facilitate adolescent disclosure. In addition, most of the literature on adolescent disclosure has utilized samples consisting of mainly White American middle-class families. Therefore, much less is known about adolescent disclosure in low-socioeconomic and culturally underrepresented families. Studies I and II demonstrated the need to examine specific parental responses to adolescent disclosure in real-time rather than negative or positive affect more broadly. Results revealed the impact of validation and interest in facilitating quicker subsequent adolescent disclosure, as well as the negative impact of anger on subsequent adolescent disclosure. Study III highlighted the need to examine the impact of culturally specific factors on adolescent disclosure when examining underrepresented populations. Taken together, the findings from this dissertation provide further insight into how adolescent disclosure is influenced by parental response behaviors, cultural factors, and positive adjustment during real-time interactions. Further, these findings highlight the importance of studying disclosure and positive adjustment in underrepresented groups.

Chapter 2, study I, explored the role of mothers' emotion-related responses (ERRs) to disclosures and adolescent perspective taking in the timing of future adolescent disclosures during real-time discussions. Adolescent disclosures and maternal ERRs were coded moment-to-moment during a problem-solving discussion and adolescents reported on their perspective taking. Multilevel Generalized Linear Mixed-Effects Models revealed that maternal interest and validation predicted the shortest lag times compared with other maternal ERRs. In addition, adolescent perspective taking was found to moderate associations between maternal ERRs to adolescent disclosures and lag times. Specifically, adolescents high in perspective taking were most likely to make quicker subsequent disclosures when mothers responded to disclosures with interest. This is the first study to examine how contingent parental responses to adolescent disclosures in real time affect the timing of subsequent disclosures during parent–adolescent conversations. Findings from this study highlight the importance of parental communication of both validation and interest in promoting adolescent disclosure in the context of parent-adolescent conversations.

Chapter 3, study II, builds upon study I by a) examining the impact of specific negative parental responses on subsequent adolescent disclosures and b) examining the association between disclosure and adolescent physical health in an underrepresented population (predominantly Latinx families with an adolescent managing type 1 diabetes). Adolescent disclosures and parental affective responses were coded moment-to-moment

during a conflict discussion task and adolescents' HbA1c was obtained from clinic records. Generalized linear mixed models revealed that adolescents took longer to disclose again when parents responded to prior adolescent disclosures with higher levels of anger and of positive affect (e.g., humor, joy, affection) relative to their baseline levels of these emotions. This finding is consistent with findings from study I, which found that although interest and validation were associated with shorter lag times, humor, affection, and enthusiasm were associated with longer lag times to subsequent disclosures. In addition, results revealed that adolescents disclosed more quickly when parents responded with lower expressive suppression. These patterns also varied depending on HbA1c. Specifically, adolescents with lower HbA1c disclosed again more quickly following their previous disclosure, and when parents responded to disclosures with increased anger, adolescents with higher HbA1c (indicating worse glycemic control) took longer to disclose again compared with adolescents with lower HbA1c. Findings from this study highlight that parental ERRs to disclosures have implications for adolescent physical health.

Chapter 4, study III, builds upon studies II and III by a) examining differences in observed disclosure across various racial/ethnic groups and b) examining associations between observed disclosure, positive adjustment behaviors, and cultural factors. Specifically, study III explored associations between observed adolescent disclosure to parents, early cultural factors, and adjustment outcomes in a sample of racially/ethnically diverse families from low socioeconomic status backgrounds. The current study utilized data from a much larger study consisting of mothers and children enrolled in the Early Head Start Research and Evaluation Project (EHSREP). Mother-adolescent discussions were assigned a global disclosure code. In addition, survey measures were collected from mothers and teachers. A one-way ANOVA revealed that Mexican American adolescents engaged in significantly lower levels of disclosure compared to African American adolescents, and African American adolescents engaged in the highest levels of disclosure compared to the other racial/ethnic groups. Results also revealed that there was a significant effect of speaking English at home on Mexican American adolescent disclosure. Specifically, speaking English at home was prospectively associated with increased levels of adolescent disclosure. In addition, Spanish-speaking Mexican American adolescents engaged in significantly lower levels of disclosure compared to both English-speaking Mexican American and African American adolescents. Observed adolescent disclosure was not significantly associated with positive adjustment behaviors. Findings from this study highlight a) differences in disclosure among underrepresented racial/ethnic groups and b) that early cultural factors have implications for adolescent disclosure.

Collectively, findings from this dissertation highlight the importance of examining transactional associations between parent-adolescent behaviors. This dissertation demonstrated that observed transactional associations between parent-adolescent behaviors can have implications for adolescent health. In addition, findings from this dissertation also highlight the importance of utilizing dynamic, observational methodologies. Due to the novel methodologies utilized, these studies were able to expand the current literature by identifying both which specific parental response behaviors and how these behaviors either facilitate or inhibit adolescent disclosure during

real-time interactions. Lastly, findings from this dissertation highlight the importance of examining parent-adolescent communication and behaviors within understudied populations. Specifically, these studies provided information about the frequency of disclosure within a diverse sample of families from low socioeconomic backgrounds, culturally specific factors that impact observed adolescent disclosure in Mexican American families, and how observed disclosure relates to adolescent physical health among adolescents with type 1 diabetes. Findings from this dissertation will not only be able to inform research on observed adolescent disclosure in underrepresented populations but will also guide and inform interventions aimed at families who struggle with a lack of disclosure from adolescents.

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Chapter 2 Tables and Figures

Table 1. *Descriptive Statistics of Maternal Emotional Responses and Adolescent Disclosure Variables.*

Variable	Min	Max	M(*SD*)
Maternal responses			
Negative affect	0	1.00	0.29 (0.27)
Positive affect	0	0.41	0.08 (0.11)
Validation	0	0.58	0.16 (0.16)
Interest	0	0.37	0.11 (0.10)
Neutral affect	0	1.00	0.35 (0.20)
Adolescent disclosure			
Disclosure frequency	2	34	14.51 (7.47)
Disclosure duration (seconds)	14.88	347.15	155.52 (85.80)
Lag time to subsequent disclosure (seconds)	0.07	359.31	25.65 (38.24)
Adolescent perspective taking	1.50	4.83	3.31 (0.65)

Notes: Min = minimum, Max = maximum, *M* = mean, *SD* = standard deviation. Maternal responses = proportion of maternal responses to adolescent disclosures for each emotion

Table 2. *Generalized Linear Mixed Models Results for Maternal ERRs Predicting Lag Times to Subsequent Adolescent Disclosures*

Variable	Estimate (*SE*)	Effect size (s)	*p*	95% CI
Model 1: Neutral affect as a reference group				
Fixed effects				
Intercept	11.551 (.181)		<.001	[11.195, 11.907]
β_1 Negative response	-.002 (.001)	-.21	.001	[-.004, -.001]
β_2 Positive response	-.021 (.001)	-2.27	<.001	[-.023, -.019]
β_3 Validation response	-.279 (.001)	-26.59	<.001	[-.281, -.278]
β_4 Interest response	-.435 (.001)	-36.64	<.001	[-.437, -.433]
Random effects				
β_5 Adolescent age	.147 (.110)	16.45	.183	[-.070, .364]
β_6 Adolescent gender (0 = female, 1= male)	-.185 (.123)	-17.55	.135	[-.426, .057]
β_7 Negative (total duration)	-.001 (.001)	-.10	.527	[-.002, .001]
β_9 Positive (total duration)	-.000 (.002)	0	.807	[-.004, .003]
β_{10} Validation (total duration)	.001 (.001)	.11	.482	[-.002, .004]
β_{11} Interest (total duration)	.000 (.001)	0	.801	[-.002, .002]
β_{12} Disclosure frequency	-.064 (.009)	-6.44	<.001	[-.082, -.046]
β_{1013} Disclosure duration	-.002 (.001)	-.22	.037	[-.003, -.000]
Model 2: Negative affect as a reference group				
Intercept	11.550 (.183)		<.001	[11.191, 11.910]
β_1 Positive response	-.019 (.001)	-2.05	<.001	[-.021, -.017]
β_2 Validation response	-.277 (.001)	-25.11	<.001	[-.279, -.275]
β_3 Interest response	-.433 (.001)	-36.47	<.001	[-.435, -.431]
Model 3: Positive affect as a reference group				
Intercept	11.538 (.188)		<.001	[11.170. 11.907]
β_1 Validation response	-.258 (.001)	-23.32	<.001	[-.260, -.256]
β_2 Interest response	-.414 (.001)	-34.76	<.001	[-.416, -.411]
Model 4: Validation as a reference group				
Intercept	11.269 (.208)		<.001	[10.920, 11.731]
β_1 Interest response	-.156 (.001)	-12.35	<.001	[-.158, -.153]

Notes. SE = standard error, CI = confidence interval. Effect size (s) = exponentiated predicted values that indicate lag times until subsequent disclosures in seconds for maternal response variables. All models include adolescent age, gender, disclosure frequency, duration, and durations of maternal emotions as covariates (random effects). Only non-redundant coefficients are shown for each model.

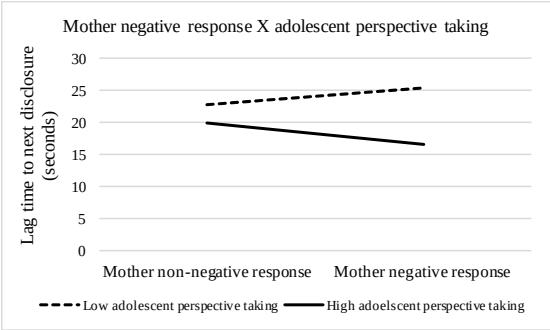
Table 3. *Interactions Between Maternal ERRs and Adolescent Perspective Taking Predicting Lag Times to Subsequent Adolescent Disclosures*

Variable	Estimate (*SE*)	Effect size (s)	*p*	95% CI
Fixed effects				
Intercept	10.208 (.165)		<.001	[9.884, 10.531]
β_1 Negative X PT	-.286 (.001)	-6.75	<.001	[-.289, -.284]
β_2 Positive X PT	-.287 (.002)	-6.77	<.001	[-.291, -.283]
β_3 Validation X PT	-.119 (.002)	-3.04	<.001	[-.123, -.116]
β_4 Interest X PT	-.326 (.002)	-7.54	<.001	[-.330, -.322)
Random effects				
β_5 PT	.233 (.240)	7.12	.334	[.240, .705]

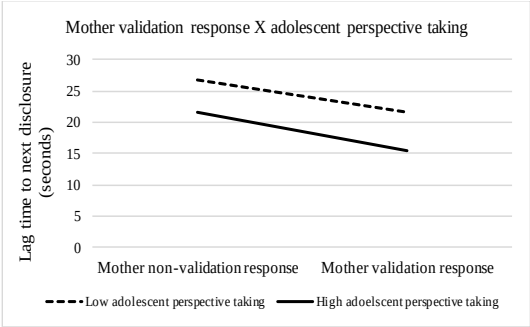
Notes. SE = standard error, CI = confidence interval, PT = perspective taking. Effect size (s) = exponentiated predicted values that indicate lag times until subsequent disclosures in seconds. All models include main effects of maternal emotional responses.

Figure 1. *Interactions between Maternal Emotional Responses to Adolescent Disclosures and Adolescent Perspective Taking Predicting Lag Times to Subsequent Disclosures.*

A)



B)



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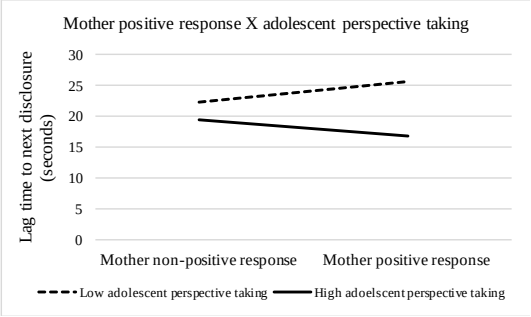

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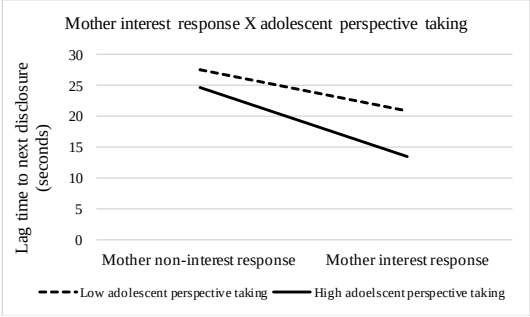


Chapter 3 Tables and Figures

Table 1. *Descriptive Statistics of Study Variables.*

Variable	Min	Max	*M* (*SD*)
Parent affective responses to disclosures			
Positive	-3.100	1.850	-.062 (.440)
Anger	-1.950	2.200	-.026 (.548)
Sadness	-3.650	1.850	-.030 (.423)
Anxiety	-2.800	1.800	-.038 (.553)
Suppression	-3.200	1.850	-.005 (.564)
Adolescent disclosure			
Lag time to subsequent disclosures (seconds)	1.000	478.000	25.850 (44.666)
Disclosure to parent (adolescent report)	1.000	5.000	3.952 (1.075)
HbA1c	5.800	11.800	8.524 (1.192)

Notes: Min = minimum, Max = maximum, *M* = mean, *SD* = standard deviation. For parent affective responses to disclosures, negative values indicate the parent expressed less of that affect following an adolescent disclosure, and positive values indicate the parent expressed more of that affect following a disclosure than average.

Table 2. *Generalized Linear Mixed Model Results for Parent Affective Responses Predicting Lag Times to Subsequent Adolescent Disclosures*

Variable	Estimate (*SE*)	*p*	95% CI
Intercept	2.401 (.590)	<.001	[1.244, 3.558]
Positive response			
Low vs. medium	-7.811 (2.959)	.008	[-13.618, -2.004]
Medium vs. high	-2.987 (2.845)	.294	[-8.569, 2.595]
Low vs. high	-10.799 (3.934)	.006	[-18.518, -3.079]
Anger response			
Low vs. medium	-4.099 (1.6676)	.014	[-7.370, -.828]
Medium vs. high	-4.757 (2.377)	.046	[-9.421, -.092]
Low vs. high	-8.856 (2.818)	.002	[-14.385, -3.326]
Sadness response			
Low vs. medium	-1.930 (3.545)	.586	[-8.886, 5.025]
Medium vs. high	-1.397 (2.134)	.513	[-5.584, 2.790]
Low vs. high	-3.327 (3.949)	.400	[-11.077, 4.423]
Anxiety response			
Low vs. medium	1.527 (2.392)	.523	[-3.167, 6.222]
Medium vs. high	3.326 (1.757)	.059	[-.122, 6.774]
Low vs. high	4.853 (2.745)	.077	[-.532, 10.239]
Suppression response			
Low vs. medium	6.180 (2.199)	.005	[1.866, 10.495]
Medium vs. high	-2.186 (2.059)	.289	[-6.227, 1.854]
Low vs. high	3.994 (2.925)	.172	[-1.746, 9.733]
Disclosure to parent	-.103 (.054)	.057	[-.209, .003]
Socioeconomic status	-.317 (.065)	<.001	[-.444, -.190]
Adolescent age	.084 (.032)	.008	[.021, .146]
Adolescent gender (0=male, 1=female)	-.274 (.123)	.026	[.032, .5154]

Notes. SE = standard error, CI = confidence interval. Disclosure number is included in the model as a repeated effect.

Table 3. *Interactions Between Parent Affective Responses to Adolescent Disclosures and HbA1c Predicting Lag Times to Subsequent Disclosures*

Variable	Estimate (*SE*)	*p*	95% CI
Model 1: Parent positive as a predictor			
Intercept	3.445 (.803)	<.001	[1.870, 5.020]
HbA1c	-.126 (.052)	.015	[-.227, -.025]
Parent positive	3.175 (1.444)	.028	[.341, 6.009]
Parent positive X HbA1c	-.343 (.168)	.012	[.072, .584]
Model 2: Parent anger as a predictor			
Intercept	3.667 (.784)	<.001	[2.129, 5.205]
HbA1c	-.142 (.051)	.006	[-.253, -.042]
Parent anger	-1.874 (.753)	.013	[-3.351, -.398]
Parent anger X HbA1c	.267 (.089)	.003	[.092, .442]
Model 3: Parent sadness as a predictor			
Intercept	3.330 (.808)	<.001	[1.744, 4.915]
HbA1c	-.120 (.052)	.021	[-.222, -.018]
Parent sadness	-.779 (1.236)	.529	[-3.205, 1.647]
Parent sadness X HbA1c	.095 (.147)	.515	[-.192, .383]
Model 4: Parent anxiety as a predictor			
Intercept	3.164 (.831)	<.001	[1.534, 4.794]
HbA1c	-.117 (.053)	.027	[-.221, -.013]
Parent anxiety	-.323 (.895)	.719	[-2.080, 1.434]
Parent anxiety X HbA1c	.058 (.105)	.585	[-.149, .265]
Model 5: Parent suppression as a predictor			
Intercept	3.409 (.801)	<.001	[1.837, 4.980]
HbA1c	-.117 (.052)	.024	[-.219, -.016]
Parent suppression	-.912 (.873)	.297	[-2.625, .802]
Parent suppression X HbA1c	.106 (.103)	.304	[-.096, .308]

Notes. SE = standard error, CI = confidence interval. All models include socioeconomic status, adolescent age, gender, and disclosure to parent as covariates. Disclosure number is included as a repeated effect.

Figure 1. *Graphical representations of parent affective responses to adolescent disclosures predicting lag time to subsequent disclosures*

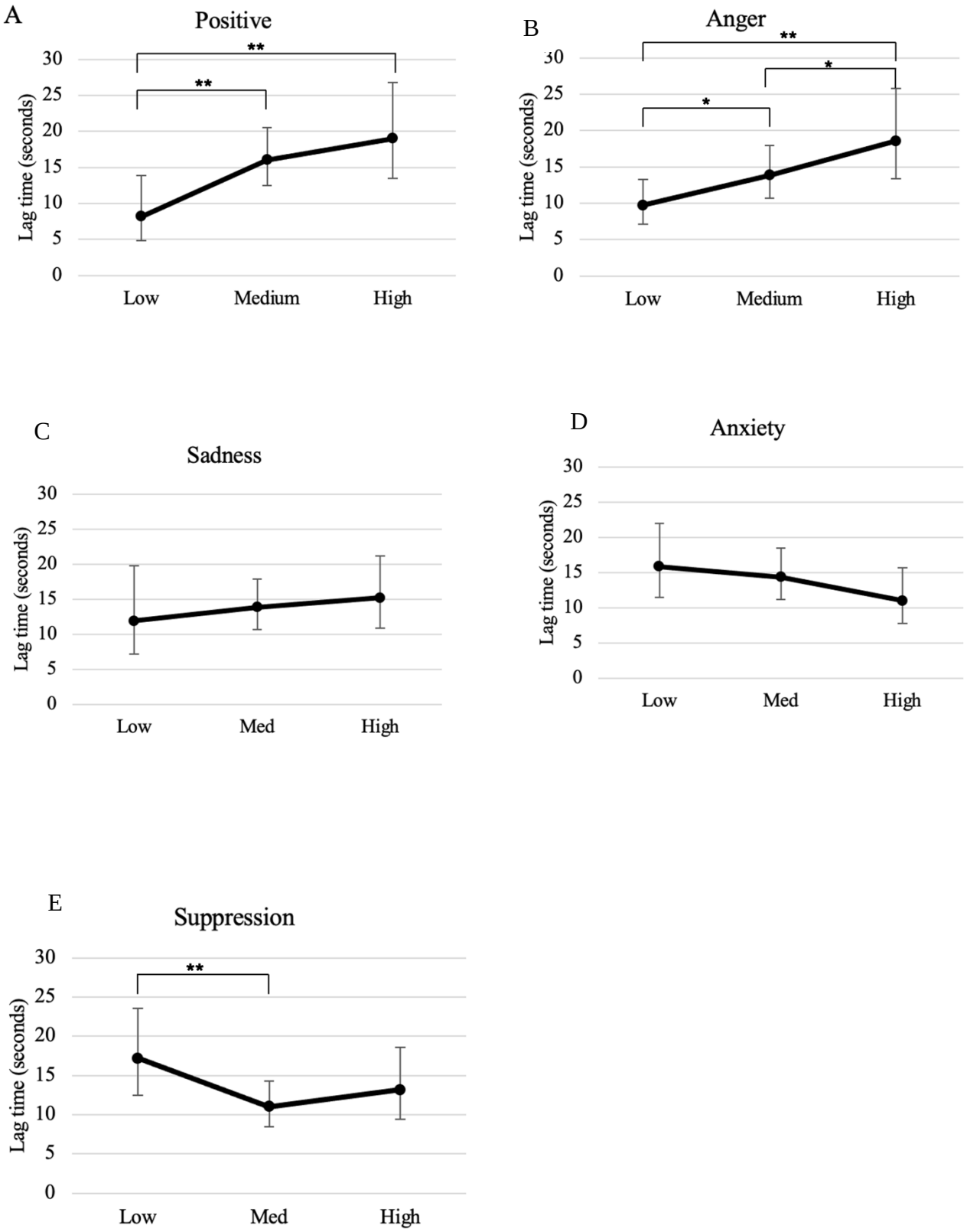
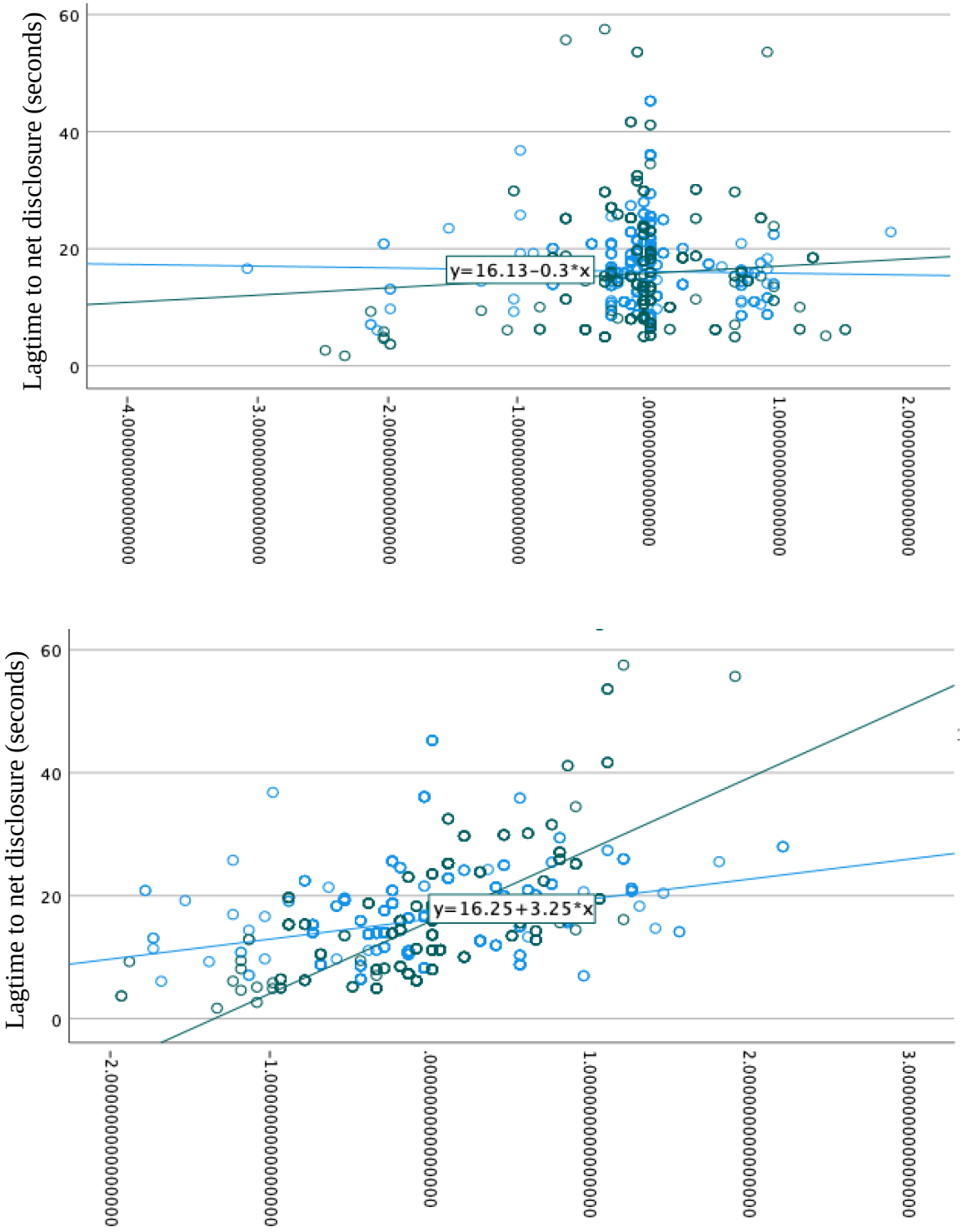


Figure 2. *Interactions Between Parent Positive and Anger Responses to Adolescent Disclosures and HbA1c Predicting Lag Times to Subsequent Disclosures.*



Chapter 4 Tables and Figures

Table 1. *Descriptive statistics of demographic and study variables*

Variables	Entire Sample *N* (%)	European American	African American	Mexican American
Highest Level of Education Completed				
Less than High School	114 (27)	17 (11.9)	22 (11.2)	82 (56.2)
High School diploma or GED	108 (25.5)	32 (22.3)	46 (34.3)	30 (20.5)
Post high school vocational school	42 (9.9)	20 (13.9)	15 (11.2)	7 (4.8)
Some College	72 (17.0)	32 (22.2)	31 (23.1)	9 (6.2)
Associate Degree	44 (10.4)	20 (13.9)	16 (11.9)	8 (5.5)
Bachelor's Degree or Above	44 (10.4)	23 (16)	11 (8.1)	10 (6.9)
Total Household Income Past Year				
$25,000 or less	195 (43.9)	53 (35.3)	76 (52.1)	66 (44.3)
More than $25,000	249 (56.1)	96 (64.0)	70 (47.9)	83 (55.7)
Child Gender				
Female	220 (48.9)	79 (52.7)	72 (48)	69 (46)
Male	230 (51.1)	71 (47.3)	78 (52)	81 (54)
Child Age at Enrollment				
Pregnant	115 (26.4)	40 (27)	45 (30.6)	30 (21.4)
<5 months	147 (33.8)	49 (33.1)	49 (33.3)	49 (35)
5+ Months	173 (39.8)	59 (39.9)	53 (36.1)	61 (43.6)
Household				
Lives with Husband	116 (26.7)	52 (34.7)	11 (7.9)	53 (37.9)
Lives with Other Adults	176 (40.5)	52 (34.7)	67 (45.6)	57 (40.7)
Lives Alone	143 (32.9)	44 (29.7)	69 (46.9)	30 (21.4)
Parent Age	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Mother Age	34.45 (5.88)	34.47 (5.55)	33.82 (6.25)	35.05 (5.79)
Study Variables	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Overall Adolescent Disclosure	.79 (.83)	.76 (.84)	.93 (.79)	.68 (.85)
SSRS Cooperation	1.43 (.44)	1.51 (.42)	1.31 (.42)	1.46 (.45)
SSRS externalizing	.41 (.48)	.33 (.42)	.59 (.52)	.35 (.47)
SSRS self-control	1.47 (.49)	1.60 (.43)	1.22 (.53)	1.56 (.44)
SSRS hyperactivity	.69 (.56)	.64 (.55)	.80 (.52)	.66 (.61)
Acculturation	-	-	-	7.12 (2.09)
Speak English at home	-	-	-	.55 (.50)
Speak Spanish at home	-	-	-	1.71 (.71)
Generational Status	-	-	-	1.35 (.44)

Notes. SD = Standard Deviation, *M* = Mean, % = Percent, *N* = Sample size

Table 2. *Correlations between disclosure and cultural variables*

Variable	Disclosure	Acculturation	Speak English at Home	Speak Spanish at Home	Generation Status
Disclosure	-				
Acculturation	.20*	-			
Speak English at Home	.27**	.82**	-		
Speak Spanish at Home	.05	-.56**	-.38**	-	
Generational Status	.10	.87**	.60**	-.56**	-

Notes. *$p < .05$, **$p < .01$

Table 3. *Hierarchical multiple regression predicting disclosure from acculturation*

Variable	ΔR^2	Sig.	Beta	Sig.
Mother Age	.07	.00**	-.26	.00**
Acculturation	.04	.02*	.20	.02*
Mother Age[a], Acculturation[b]	.28	.06	-.21[a] .11[b]	.02* .22

Note. In all steps of the model, covariates (mother age) were entered.
*$p < .05$, **$p < .01$

Table 4. *Hierarchical multiple regression predicting adolescent social behaviors from adolescent disclosure using cultural groups*

	DV: Cooperation		DV: Externalizing		DV: Self-Control		DV: Hyperactivity	
Variable	ΔR^2	ß	ΔR^2	ß	ΔR^2	ß	ΔR^2	ß
Step 1	.08**		.03*		.04*		.08**	
Mother Age		.06		-.06		.08		-.04
Child Sex		-.28**		.17*		-.18*		.27**
Step 2	,00		.00		.00		.01	
Cultural group		.05		-.05		.06		-.05
Disclosure		-.01		-.02		.02		-.10
Step 3	.01		.01		.01		.01	
Cultural group		-.03		.04		-.02		.03
Disclosure		-.21		.20		-.17		.08
DisclosurexCultural Group		.24		-.25		.23		-.20

Note. In all steps of the model, covariates (mother age & child sex) were entered.
*$p < .05$, **$p < .01$

Table 5. *Hierarchical multiple regression predicting adolescent social behaviors from adolescent disclosure using ethnic groups*

	DV: Cooperation		DV: Externalizing		DV: Self-Control		DV: Hyperactivity	
Variable	ΔR^2	ß	ΔR^2	ß	ΔR^2	ß	ΔR^2	ß
Step 1	.08**		.03*		.04*		.08**	
Mother Age		.06		-.06		.08		-.04
Child Sex		-.28**		.17*		-.18*		.27**
Step 2	,00		.00		.00		.01	
Ethnic group		.02		-.01		.01		-.03
Disclosure		-.01		-.02		.02		-.09
Step 3	.01		.01		.01		.01	
Ethnic group		-.06		.08		-.07		.03
Disclosure		-.22		.23		-.20		.07
DisclosurexEthnic Group		.23		-.28		.25		-.19

Note. In all steps of the model, covariates (mother age & child sex) were entered.
*$p < .05$, **$p < .01$

Figure 1. *Disclosure means across ethnic groups*

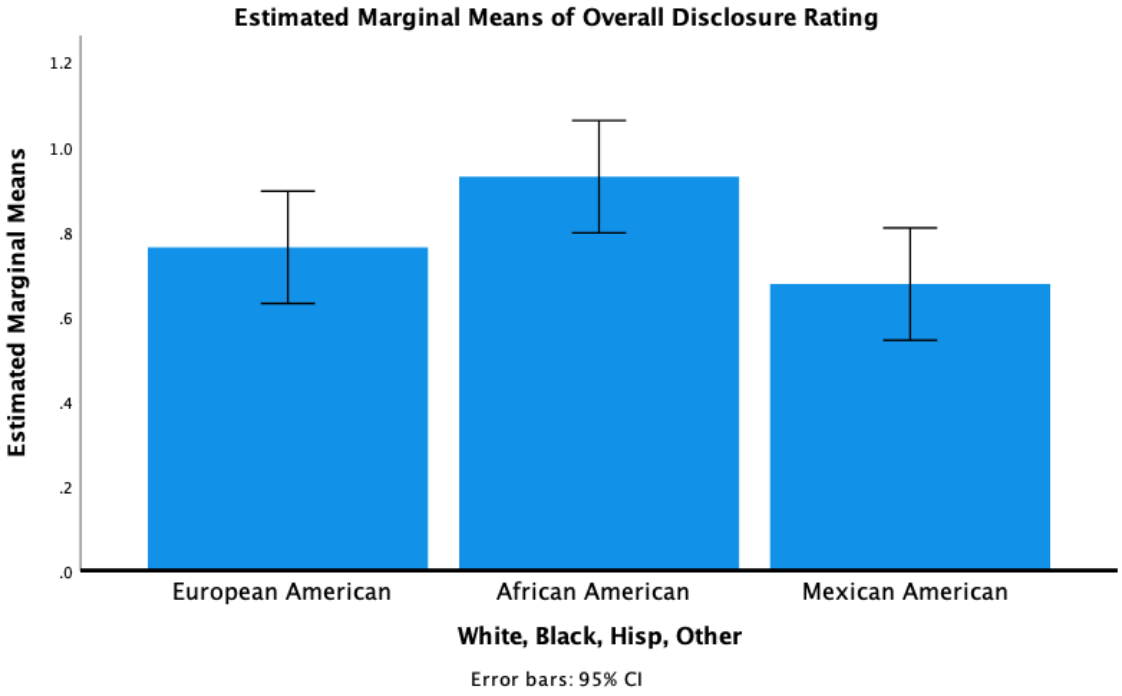


Figure 2. *Disclosure means for mothers speaking English at home using Mexican American Subsample*

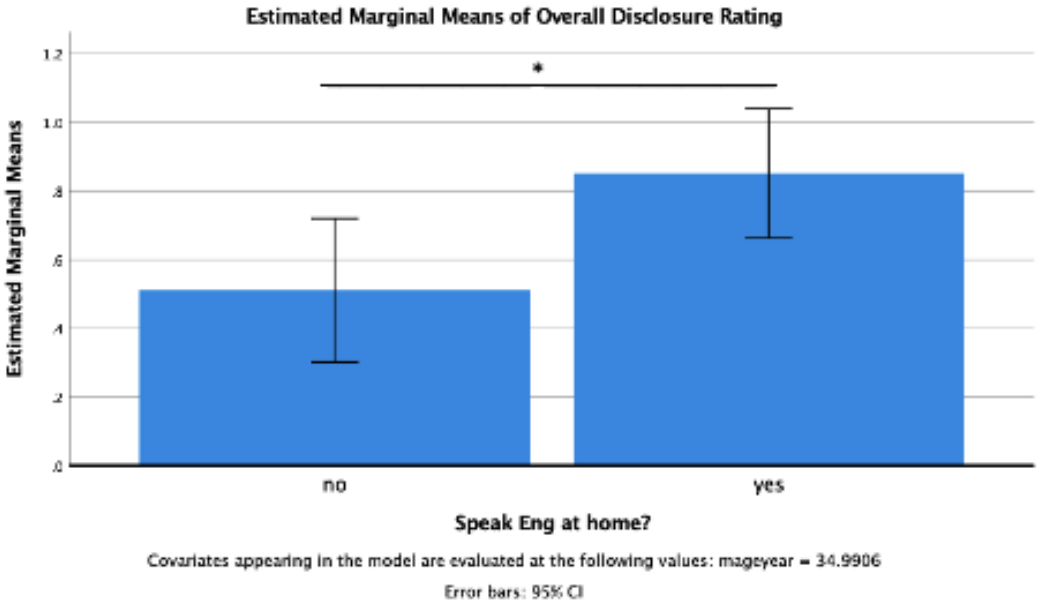
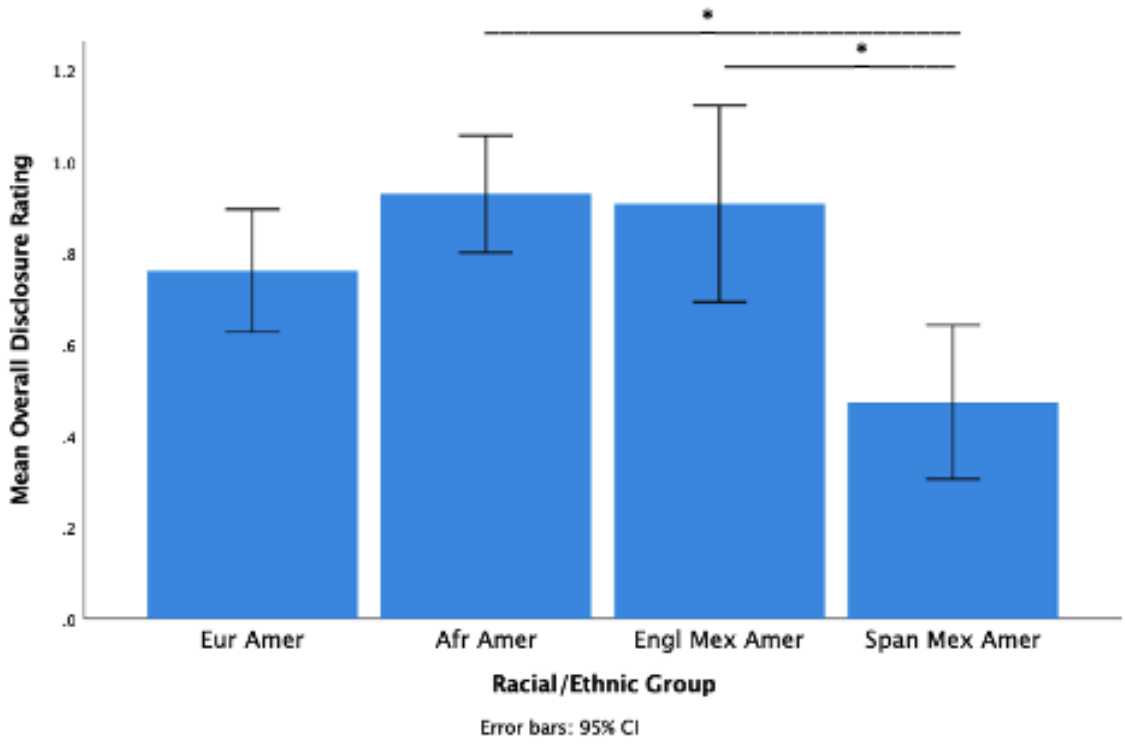


Figure 3. *Disclosure means across cultural groups*



Appendix A

Introduction to Coding Disclosure in Parent-Adolescent Conflict Discussions

The overall goal of the coding system is to identify the dynamics between the target adolescents and their parents during a task when the adolescents and their parents are discussing topics of conflict. To maximize the reliability of this system, it is essential that you carefully follow the procedure described below when coding a discussion.

This coding system codes interpersonal interactions on the dyadic level. This system codes each members' interactions separately within a dyad. Thus, for each dyad, for example, the "mother-adolescent" dyad, you will have a code for speech of the adolescent to the mother and a code for speech of the mother toward the adolescent. You will focus mainly on the adolescent's speech and code for the mother before and after the child discloses something.

How to Code the Interaction:

Step 1- First, you should listen to the family discussion one time in its entirety. The goal in this pass through the discussion is to get as good a feel as possible for the general tone of the discussion, as well as for the nature of the conflict. For this reason, you should generally listen to the discussion without stopping or replaying sections of it, except in those few cases where this is necessary to understand what parties are saying. The object of this pass through the video is to hear the discussion in "real time" as you would hear it if you were listening to it live.

During this pass, you should jot notes on your coding sheet, which you feel might be important for coding the interaction.

Step 2- After your initial pass through, you should note the time of the instance of disclosure as well as the topic being disclosed (try to be as concise as possible). You will be coding informational self-disclosure and emotional self-disclosure separately. In order to assign the appropriate scores for the interaction you should consult the coding manual.

Note on multiple topics:

When multiple topics are discussed, you should include both topics in coding. However, coding should be weighted according to (1) the amount of time spent on each topic, (2) how important the topic is to the adolescent, and (3) when in doubt assume the first topic is more important.

Note on the appropriate place to stop coding:

Even if the participants finish their discussion of the conflict topic, you should continue to watch and code the entirety of the conversation, even if the participants are not at all on topic

Depth of Informational Self-Disclosure

Informational self-disclosures are statements that communicate something that the partner would not automatically know about the person, and that wouldn't necessarily come up in everyday conversation. Self-disclosure includes information that is shared about oneself. **Self-disclosure may be assessed by asking the question, "Did this person share personal information or did they disclose information that they could've kept secret?"** Self-disclosed information includes private statements about oneself that would make the other person feel as though they know the speaker better. Self-disclosure refers both to the topic and to what the person says about it. Willingness to ask questions that express your interests may be considered self-disclosing. Each disclosure (could be a statement) is coded independently, and the overall score is assigned based on the disclosure that reaches the highest level. **Score the highest level of self-disclosure as the score you assign.** Persistence or lack of it would alter scores by +/- 1 point.

Affect: If a lot of affect (emotion) is displayed, this can be part of what's being disclosed and be scored. Sometimes, the most disclosing thing might even be the affect more than the content (i.e. that I'm really worried about something may be more disclosing than what that something is). However, it's also possible for people to be highly self-disclosing without showing any real affect.

Vulnerable: With vulnerability assess the degree to which the person would be made vulnerable sharing this information with the parent. Vulnerability is assessed by the degree of social vulnerability of the statement, not vulnerability within the dyad. Just because a statement is an area of disagreement within the dyad does not mean it makes the person vulnerable. For example, teen presents problem and parent responds, "I don't think that problem is a big deal". While one might argue that might make the individual vulnerable by potentiating disagreement that is not what is assessed with the vulnerability in this code.

NOTE: Criticism Caveat - Saying something critical or being angry about the other person typically minimizes your own vulnerability to such an extent that we code it as a "0" even though it might seem to fit elsewhere. Some angry statements might not get scored at all (i.e. attacks) and others could be scored highly (to the extent they reflected great vulnerability, i.e., by implicitly conveying a sense of hurt or upset, even though they are covering it up or minimizing it with anger).

Do not score down just because someone is saying something easily within the relationship; nor do you score up if they seem anxious with what they are disclosing.

0.5 Brief statement about a more specific topic relating to self that doesn't fit a 0 but doesn't fit into higher scores.

Example: "I'm gonna fail this Spanish test." (said matter of factly with no elaboration)
Example: "I need some money to buy some sneakers, I don't know how to get it." (Child is simply inquiring about how to raise money)
Example: "I'm annoyed with my sister for picking on me."
(A statement made about the siblings' behavior being out of line with no elaboration).

1 Personal opinions, not necessarily controversial but still going out on a limb a bit.

Encompasses facts about self **OR** the speaker is going out a little more on the limb with the information being disclosed.

Example: "I'm worried that I'm gonna fail this Spanish test."
Example: "I feel like I get more done when you're not in the house. Like when you went on that walk and I got ready for school and got out fine when you're not there."

If someone in essence says "me too" to a highly disclosing statement, without adding other information, it usually will get a maximum of a 1 no matter how said or in what context (except in cases where the material is extremely self-disclosing—e.g., revealing a history of sexual abuse).

** 2 and above is getting into areas that are not commonly shared with strangers or others and are more difficult to say. **

2 Relatively controversial opinions (i.e. sharing information about bullying/teasing). Expressing feelings about information that is socially acceptable but not always readily expressed. Also coded here are things that might be a bit more embarrassing, things that someone might think the speaker is a little silly for saying.

Example: "Yeah and it's really bad, I'm tired of humiliating myself by taking that test over and over again, it's a horrible test and I'm terrible at it."
Example: Teen to Parent: "Larry keeps picking on me" (w/ no follow-up).

3 Sharing information about something that expresses strong feelings that are less socially acceptable (e.g., embarrassed (for 13 year old); for age 21: "I feel like I need more of your time right now.").
OR

Revealing facts about self that are a little strange to reveal to a stranger, a little potentially embarrassing. The information that is revealed has some emotional content and seems to be important to the speaker.

Example: "Kids are teasing me." (Worse than Larry picking on me, because implies something more embarrassing, i.e. a *group* is making fun of me vs. 1 person acting like a jerk, it is something that would not typically be shared).
Example: "I was worried about you when you fell and the ambulance came to get you." (for 13 year old)
Example: "Dad doesn't want to talk to me, he never says anything to me, he doesn't understand me."

4 Areas not commonly shared.
Expressing strong feelings (other than socially acceptable feelings, such as anger at something outrageous. Can also be sadness, fear, loneliness, or anxiety about something in particular).
OR
Describing experiences or facts about self that would be very strange to tell a stranger.

Example: "I feel like no matter what type of accomplishment there is on my part, there is always something more to be bugged about. It's never enough." (Adolescent shares that accomplishments are never enough because there is always more to be done, which causes adolescent to feel inadequate)

Depth of Emotional Self-Disclosure

This code assesses the verbalization of inner states, and so we are coding **verbal statements that inform us about what the individual is feeling**. *Higher-level disclosures will state the emotion more explicitly, whereas lower level disclosures imply the emotion that is felt* (and thus some inference is required to determine the emotion that is felt). In assigning this code, each emotional disclosing statement is coded independently, and the overall score is assigned by combining these scores.

Note.
(1) Elaboration (or lack of it) alters the scoring of a statement by ± 1/2 point such that disclosures that are followed up or elaborated get more credit.

(2) Emotional tone alters the scoring of a statement by ± 1/2 point, such that statements

made with more feeling or emotion (e.g. with a lot of affect or enthusiasm) get higher scores, and statements made with emotions that seem to minimize the statement (e.g. making a joke out of something or saying it in a way that minimizes the importance) get lower scores.

Note.
Statements of the type "One of my big issues is" are not scored as a disclosure of internal states

Note: Statements of the type "I think you need to….", or "I don't think you should" will not be scored as a disclosure. Statements of the type "I need…", "I want…", "I don't need….", or "I don't want…" will be scored as disclosure.

STEP 1. Individual Statement Scoring: Every instance of the behaviors outlined below should be noted and scored using the following scale.

Statements at the .5 and 1 level do not expressly state the feeling that is being conveyed

.5- Low: Statements about internal states where the feelings are more implied (i.e., you have to really draw out or interpret to get the emotion underlying the statement).

Example 1: "I feel like you don't listen to what I am saying."
Example 2: "I feel like there is no recognition for the things that I do"
Example 3: "Getting back to dance has been a good thing for me" [said without further elaboration]
Example 4: "Honestly you don't take care of me that much."

1- Medium: Statements about thoughts and feelings where the feeling is expressed but in a minimal or less clear way (i.e. hints of what the emotion would be, but some inference is required)

Example: "How does it feel to me going to a school every day that I don't want to go to because you sent me there? Do you think I'm going to want to help you by cleaning up when I get home or am I going to want to relax because I had a horrible day because of you?"

2- Medium High: Clearly stating feelings that are less intense (e.g. good, bad, nice, not nice, yucky) and more readily expressed. You have to have a clear statement of a feeling to reach this level.

Example 1: "The other day you walked in and you just wouldn't talk to me. That made me feel bad."
Example 2: "I'm not going to play this role any more – I feel like I am the one doing all the work and it doesn't feel good."

3- High: Clearly stating feelings that are deeper or more intense (e.g., anger, hurt, anxiety, sadness, fear, emotional pain, loneliness, frustration, anxiety, despair, inadequacy).

Example 1: “I’m always the one that gets in trouble and then I get mad because you catch me and not Luca. He can do whatever he wants, but when you catch me I get in trouble.”
Example 2: “Often the thing that really bugs me is when I say ‘can you not interrupt me’ and instead of you saying I’m sorry I did just interrupt you, you get defensive or act offended that I’m calling you out or just push it aside, that’s what really frustrates me.”
Example 3: “I know I was just feeling kind of discouraged. I didn’t feel like I wasn’t getting very much help from anyone. I had a lot of things going on too. We had the hockey championships and I was preparing for that, And I don’t think I really played as well as I wanted to have it was kind of discouraging and no one else just really seemed to care about that.”

Appendix B

Coding Global Disclosure in Parent-Child Conflict Discussions

Citations:

Allen, J. P., Hall, F. D., Insabella, G. M., Land, D. J., Marsh, P. A., & Porter, M. R. (2001). *Supportive behavior task coding manual*. Charlottesville, VA: University of Virginia.

Main, A., Lougheed, J. P., Disla, J., & Kashi, S. (2018). Timing of adolescent emotional disclosures: The role of maternal emotions and adolescent age. *Emotion.*

Marsh, P. A., Busch, A., Cowan, C. P., & Cowan, P. A. (2002). *Couples Interaction Coding System*. Berkeley, CA: University of California, Berkeley.

The overall goal of the coding system is to identify child disclosure to their parents during a task when the child and their parent are discussing topics of conflict. To maximize the reliability of this system, it is essential that you carefully follow the procedure described below when coding a discussion.

How to Code the Interaction:

Step 1- First, you should listen to the family discussion one time in its entirety. The goal in this pass through the discussion is to get as good a feel as possible for the general tone of the discussion, as well as for the nature of the conflict. For this reason, you should generally listen to the discussion without stopping or replaying sections of it, except in those few cases where this is necessary to understand what parties are saying. The objective of this pass through the video is to hear the discussion in "real time" as you would hear it if you were listening to it live.

During this pass, you should jot notes on your coding sheet, which you feel might be important for coding the interaction.

Step 2- After your initial pass through, you should note the time of the instance of disclosure as well as the topic being disclosed (try to be as concise as possible). In order to assign the appropriate scores for the interaction you should consult the coding manual. You should assign a single score to an entire interaction, so consider frequency and depth of the disclosures when making your overall rating.

Note on the appropriate place to stop coding:

Even if the participants finish their discussion of the conflict topic, you should continue to watch and code the entirety of the conversation, even if the participants are not at all on topic.

Frequency and Depth of Self-Disclosure

Self-disclosure includes information and feelings (positive or negative) that are shared about oneself. Self-disclosures are statements that communicate something that the partner would not automatically know about the person, and that wouldn't necessarily come up in everyday conversation **OR** verbalization of inner states that inform us of what the individual is feeling. **Self-disclosure may be assessed by asking the question, "Did this person share personal information or did they disclose information that they could have kept secret?"** Self-disclosed information includes private statements about oneself that would make the other person feel as though they know the speaker better. Self-disclosure refers both to the topic and to what the person says about it. Willingness to ask questions that express your interests may be considered self-disclosing.

Assign a single score to an entire interaction, so take into account **frequency** and **depth** of the disclosures when making your overall rating.

Affect: If there is affect (emotion) expressed, higher-level disclosures will state the emotion more explicitly, whereas lower level disclosures imply the emotion that is felt (and thus some inference is required to determine the emotion that is felt).Sometimes, the most disclosing thing might even be the affect more than the content (i.e. that I'm really worried about something may be more disclosing than what that something is). However, it is also possible for people to be highly self-disclosing without showing any real affect.

Vulnerable: With vulnerability assess the degree to which the person would be made vulnerable sharing this information with the parent. Vulnerability is assessed by the degree of social vulnerability of the statement, not vulnerability within the dyad. Just because a statement is an area of disagreement within the dyad does not mean it makes the person vulnerable. For example, teen presents problem and parent responds, "I don't think that problem is a big deal". While one might argue that might make the individual vulnerable by potentiating disagreement that is not what is assessed with the vulnerability in this code.

Note.
(1) Elaboration (or lack of it) alters the scoring of an interaction by ± 1/2 point such that disclosures that are followed up or elaborated get more credit.

(2) Emotional tone alters the scoring of an interaction by ± 1/2 point, such that interactions containing statements made with more feeling or emotion (e.g. with a lot of affect or enthusiasm) get higher scores, and interactions containing statements made with emotions that seem to minimize the statement (e.g. making a joke out of something or saying it in a way that minimizes the importance) get lower scores.

Criticism and Defensiveness Caveats - Saying something critical, defensive, or being angry about the other person typically minimizes your own vulnerability to such an

extent that we code it as a "0" even though it might seem to fit elsewhere. Some angry statements might not get scored at all (i.e. attacks) and others could be scored highly (to the extent they reflected great vulnerability, i.e., by implicitly conveying a sense of hurt or upset, even though they are covering it up or minimizing it with anger).

Examples of Criticism/Defensiveness:

Parent: "You never help me out around the house."
Adolescent: "Yes I do! I helped you do the laundry on Tuesday!"

Parent: "You're always picking fights with your siblings and that's why you end up in trouble."
Adolescent: "They always start teasing and picking on me but you just never see it because they're sneaky!"

Parent: "You failed your math exam again because you don't study because you're always playing video games."
Adolescent: "No! I failed because the teacher is awful!"

Do not score down just because someone is saying something easily within the relationship; nor do you score up if they seem anxious with what they are disclosing.

0.6 1-2 brief statements about a more specific topic relating to self that doesn't fit a 0 but doesn't fit into higher scores **OR** 1-2 statements about internal states where the feelings are more implied (i.e., you have to really draw out or interpret to get the emotion underlying the statement).

Example: "I'm gonna fail this Spanish test." (said matter-of-factly with no elaboration)
Example: "I need some money to buy some sneakers, I don't know how to get it." (Child is simply inquiring about how to raise money)
Example: "I'm annoyed with my sister for picking on me."
(A statement made about the siblings' behavior being out of line with no elaboration).

1 1-2 statements that reflect personal opinions or feelings (e.g., anger, excitement), not necessarily controversial but still going out on a limb a bit **OR** more than 2 statements that fit into the .5 category. If statements are about feelings, the emotions are still implied.

Example: "I'm worried that I'm gonna fail this Spanish test."
Example: "I feel like I get more done when you're not in the house. Like when you went on that walk and I got ready for school and got out fine when you're not there."

Example: “I feel like you don’t listen to what I am saying.”
Example: “I feel like there is no recognition for the things that I do”
Example: “Getting back to dance has been a good thing for me” [said without further elaboration]
Example: “Honestly you don’t take care of me that much.”

If someone in essence says “me too” to a highly disclosing statement, without adding other information, it usually will get a maximum of a 1 no matter how said or in what context (except in cases where the material is extremely self-disclosing—e.g., revealing a history of sexual abuse).

** 2 and above is getting into areas that are not commonly shared with strangers or others and are more difficult to say. **

2 1-2 relatively controversial opinions (e.g., sharing information about bullying/teasing). Expressing feelings about information that is socially acceptable but not always readily expressed. Also coded here are things that might be a bit more embarrassing, things that someone might think the speaker is a little silly for saying. If feelings are expressed, these need to be more clearly-stated feelings that are less intense (e.g. good, bad, nice, not nice, yucky) and more readily expressed. You have to have a clear statement of a feeling to reach this level.

Example: “Yeah and it’s really bad, I’m tired of humiliating myself by taking that test over and over again, it’s a horrible test and I’m terrible at it.”
Example: Teen to Parent: “Larry keeps picking on me” (w/ no follow-up)
Example: “The other day you walked in and you just wouldn’t talk to me. That made me feel bad.”
Example: “I’m not going to play this role any more – I feel like I am the one doing all the work and it doesn’t feel good.”

3 Multiple occurrences (> 2) of sharing information about something that expresses strong feelings that are less socially acceptable (e.g., embarrassed). If feelings are disclosed, this would include more clearly-stated feelings that are deeper or more intense (e.g., anger, hurt, anxiety, sadness, fear, emotional pain, loneliness, frustration, anxiety, despair, inadequacy).

OR
Revealing facts about self that are a little strange to reveal to a stranger, a little potentially embarrassing. The information that is revealed has some emotional content and seems to be important to the speaker. These statements would be unlikely to be said to strangers.

Example: “Kids are teasing me.” (Worse than Larry picking on me, because implies something more embarrassing, i.e. a *group* is making fun of me vs. 1 person acting like a jerk, it is something that would not typically be shared).
Example: “I was worried about you when you fell and the ambulance came to get you.” (for 13 year old)
Example: “Dad doesn’t want to talk to me, he never says anything to me, he doesn’t understand me.”
Example: “I’m always the one that gets in trouble and then I get mad because you catch me and not Luca. He can do whatever he wants, but when you catch me I get in trouble.”
Example: “Often the thing that really bugs me is when I say ‘can you not interrupt me’ and instead of you saying I’m sorry I did just interrupt you, you get defensive or act offended that I’m calling you out or just push it aside, that’s what really frustrates me.”
Example: “I know I was just feeling kind of discouraged. I didn’t feel like I wasn’t getting very much help from anyone. I had a lot of things going on too. We had the hockey championships and I was preparing for that, And I don’t think I really played as well as I wanted to have it was kind of discouraging and no one else just really seemed to care about that.”

4 Frequent occurrences (>3) of statements similar to a “3” rating.

**Note – sometimes individuals will disclose about a single topic over multiple conversation turns, getting “deeper” into the topic with each subsequent turn. These should be coded a 3 or 4 depending on the depth of the disclosure.