

The mediating role of adolescent autonomous value-driven decision-making in the relationship  
between maternal-adolescent relationship quality and adolescent internalizing experiences: A  
longitudinal study

by

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B.A., Lee University, 2011

M.S., Lee University, 2015

M.S., Lee University, 2020

AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

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Department of Applied Human Sciences  
College of Health and Human Sciences

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Manhattan, Kansas

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## **Abstract**

Research has demonstrated the positive associations of both parent-adolescent relationship quality and adolescent autonomy development on adolescent mental health outcomes, yet less is known about the role that autonomy development may play in helping to explain the impact of high quality relationships on mental health outcomes for adolescents. Using data from Waves 4, 5, and 6 of the The Flourishing Families study, this study explored the mediating role of adolescent autonomous value-driven decision-making at Wave 5 in the relationship between maternal-adolescent relationship quality at Wave 4 and adolescent internalizing experiences at Wave 6. These factors were examined based on adolescent report through structural equation modeling techniques that modeled maternal-adolescent relationship quality, adolescent autonomous value-driven decision-making, adolescent depression, and adolescent anxiety as latent variables. In addition to exploring the direct relationships between constructs at subsequent waves, indirect effects between maternal-adolescent relationship quality and adolescent internalizing experiences were tested via the mediating pathway of adolescent autonomous value-driven decision making. Tests of moderated mediation were also conducted via the use of multiple group structural equation modeling techniques to test for any sex-based differences in the model. Results indicated that maternal-adolescent relationship quality at Wave 4 was significantly and positively associated with adolescent autonomous value-driven decision-making at Wave 5, and adolescent autonomous value-driven decision-making was significantly and negatively associated with adolescent depression at Wave 6. Significant indirect effects were detected from maternal-adolescent relationship quality to adolescent depression via the mediating pathway of adolescent autonomous value-driven decision-making.

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Approved by:

Major Professor  
Dr. Glade Topham

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## **Dedication**

To MJ, whose love and support is behind everything good in my life. She's the best part of getting to be me.

## **Chapter 1 - Introduction**

Research indicates that parent-adolescent relationship quality has a substantial association with adolescent mental health (Clayborne et al., 2021; Hoskins, 2014). In recent years, a considerable amount of research has focused on the mechanisms by which this impact happens. Factors such as parental warmth (Padilla-Walker et al., 2016), parental knowledge of the adolescent (Trahan et al., 2021), parental acceptance (McKenna et al., 2021), and open communication between parents and adolescents (Ioffe et al., 2020) have all been shown to be important elements in understanding the association between parent-adolescent relationship quality and adolescent mental health. One factor that has yet to be examined as a mediator in this association is that of adolescent value development, specifically whether the adolescent chooses their behaviors from a place of autonomy/personal desire (i.e., internal values) or from a place of fear/control (i.e., external values).

Adolescents experience a normative growth in their desire for autonomy as they age, and parents play an important role in helping to create a context that supports or interferes with the development of autonomy. Research has established that high quality parent-adolescent relationships are associated with increased levels of adolescent autonomy (Inguglia et al., 2014; Noom et al., 1999). Likewise, a large body of research has also established that parent-adolescent relationship quality has a considerable impact on adolescent mental health outcomes (Cooper et al., 1998; Griffith et al., 2019; Hoskins, 2014; Huey et al., 2020; McWey et al., 2015; Runcan, 2020; Withers et al., 2016). Given these established relationships, we could reasonably expect that autonomous decision-making might help to explain some of the mechanisms behind the impact of parent-adolescent relationship quality on adolescent mental health outcomes, which will be the main focus of this study. The three core constructs being examined in this study are

parent-adolescent relationship quality, adolescent value development, and adolescent internalizing experiences. A description of each construct is provided below.

*Parent-Adolescent Relationship Quality.* Parent-adolescent relationship quality is a multifaceted construct that has been studied in varied ways. Factors such as communication, parental autonomy support, emotional closeness, level of conflict between parent and adolescent, parental involvement, and parental regard for the adolescent have all been used to tap into the construct of parent-adolescent relationship quality (Crockett et al., 2007; McGue et al., 2005; Shomaker and Furman, 2009; Withers, 2020). In the Flourishing Families data that are being used in this study, the construct is measured with a six-item response scale adapted from a general social connectedness measure (Lee et al., 2001) with items focusing primarily on the adolescent's sense that they are comfortable being themselves in relationship with their parent. This construct involves elements such as feeling freedom to disagree with their parent, feeling that they can openly share with their parent, and feeling comfortable with some conflict in their relationship with their parent.

*Adolescent Autonomous Value-Driven Decision-Making.* Research around value development traditionally frames values as being either external, driven by a fear of consequence or from the control of another, or internal, driven by a desire to do things because they are seen as right or valuable to the person. In this study, I focus on internal values, which is measured with eight response items from the Academic Self-Regulation Questionnaire (SRQ-A) (Grolnick et al., 1997). The items measuring internal values focus broadly on themes related to autonomy and control. Items assess the level to which an adolescent chooses a behavior out of their own desire to feel good about themselves or their own sense that engaging in the behavior is important. Because internal values as measured in this study is focused on autonomous value-

driven decision-making, the term “autonomous value-driven decision-making” will be used throughout the paper to reference adolescents’ experience of internal value development.

*Adolescent Internalizing Experiences.* In this study, adolescent internalizing experiences is measured through the separate constructs of anxiety and depression, respectively making use of the 6-item generalized anxiety disorder subscale of the Spence Child Anxiety Inventory (Spence, 1998) and the 20-item Center of Epidemiological Studies Depression Scale for Children (CES-DC) measure (Weissman et al., 1980). Given that anxiety and depression are often comorbid and given that they are the most common internalizing symptoms, both were included in this study. Throughout this study, adolescent depression and anxiety will be jointly referred to as “adolescent internalizing experiences.”

Self-determination theory provides an explanation for how these three constructs may be related (Deci & Ryan, 2000; Deci & Ryan, 2008; Ryan & Deci, 2000; Ryan & Deci, 2017). In its most basic sense, self-determination theory maintains that autonomy, competence, and connection/relatedness are all predictive of positive psychological outcomes. The present study examines two of the three core constructs of self-determination theory, autonomy and connection (relationship quality), regarding their impact on adolescent internalizing experiences. The integration of self-determination theory with the model being tested is presented in Figure 1.

The data for this study were drawn from The Flourishing Families Study, a longitudinal study of parent-child relationships conducted by Brigham Young University. This study focuses exclusively on the maternal-adolescent relationship between an adolescent and their primary caregiver. The Flourishing Families data lends itself well to exploring the associations of interest in this study, as this data was longitudinally collected, has a moderately large sample size

(allowing for the use of structural equation modeling techniques), and has very low levels of missingness due to the methods of the data collection.

The present study seeks to contribute to our understanding of the relationship between parent-adolescent relationship quality and adolescent internalizing experiences by looking at the previously unexamined mediator of adolescent autonomous value-driven decision-making in the relationship between parent-adolescent relationship quality and adolescent internalizing experiences. While previous research demonstrates connections between these constructs (Cooper et al., 1998; Griffith et al., 2019; Hoskins, 2014; Huey et al., 2020; Inguglia et al., 2014; McWey et al., 2015; Noom et al., 1999; Runcan, 2020; Withers et al., 2016), no study has yet examined whether or not adolescent autonomous value-driven decision-making (i.e., internal values), help to explain the impact of parent-adolescent relationship quality on adolescent internalizing experiences. This has the potential to inform and expand the way that parents think about the role their relationship to their teen plays in the teen's development.

## **Chapter 2 - Literature Review**

### **Parent-Adolescent Relationship Quality**

Numerous studies have examined outcomes associated with various elements of parent-adolescent relationship quality. Most studies looking at parent-adolescent relationship quality have demonstrated positive outcomes for adolescents when parent-adolescent relationship quality is high. For example, high quality parent-adolescent relationships have been shown to lead to increased academic motivation (Duchesne & Larose, 2007), higher levels of competence (Papini & Roggman, 1992), decreased feelings of loneliness (Kerns & Stevens, 1996), increased rates of prosocial behavior (Padilla-Walker et al., 2016), and lower levels of overall psychological distress (Cooper et al., 1998). Parental interest, monitoring, and understanding (all components of healthy parent-adolescent relationships) have been shown to have a protective impact against bullying (Nguyen et al., 2019). There is even evidence that parent-adolescent relationship quality may help to protect against internalizing problems that are intergenerationally transmitted (Fitzgerald et al., 2022). For example, maternal-adolescent relationship quality has been shown to mediate the influence of maternal depression on adolescent internalizing symptoms (McWey et al., 2015). Adolescents generally have lower levels of depression when they perceive the quality of the maternal relationship to be higher (Withers et al., 2016), though some studies suggest that the perception may be informed by the depression rather than it being the other way around (Lee et al., 2021).

In recent years, research has continued to identify factors associated with parent-adolescent relationship quality, as well as the impact that relationship quality has on adolescent outcomes. Adolescents feeling accepted by their parents and feeling that they can talk with them about the things that are important to them are particularly important in helping adolescents feel

close to their parent (McKenna et al., 2021). When parents approach parenting in a manner that emphasizes focused attention, acceptance, and compassion (i.e., mindful parenting), it has been shown to reduce conflict in the parent-adolescent relationship that in turn leads to lower levels of internalizing symptoms for the adolescent (Park et al., 2020). Open communication also seems to have an impact in helping to lower internalizing symptoms for adolescents (Ioffe et al., 2020). Overall, attachment quality seems to play an important role in reducing the internalizing symptoms experienced by adolescents (Withers et al., 2016). This kind of connection is also linked to higher levels of self-esteem (Berenson et al., 2005; Berg, 2004; Harris et al., 2015), with some studies indicating that parental warmth helps to increase this kind of communication and disclosure between parents and adolescents (Blodgett Salafia et al., 2009). In sum, we see the positive benefits of parent-adolescent relationship quality in numerous domains of an adolescent's health and experience.

Conversely, there are numerous adolescent negative outcomes when the quality of the parent-child relationship is low. The lack of a quality relationship with a parental figure is a risk factor for the development of depression in adolescents (Runcan, 2020). Some studies indicate a normative shift during adolescence that strains this relationship, with higher alienation, decreased trust, and decreased communication between parents and adolescents (Ebbert et al., 2019). Adolescents who perceive their relationship with their parent negatively are less likely to engage in prosocial behavior, more likely to experience externalizing behaviors, and more likely to exhibit callous-unemotional traits (McKenna et al., 2020). Higher levels of psychological control from parents and lower levels of connectedness to parents have also been shown to increase adolescent internalizing symptoms, which in part may occur due to the toll on an adolescent's self-esteem (Huey et al., 2020). Other studies have also demonstrated a negative



association between adolescent mental health and conflict in the parent-adolescent relationship (Zhang et al., 2018). Conflict in this relationship even seems to be somewhat associated with higher levels of aggression in later adolescence (Smokowski et al., 2014). A longitudinal study by Griffith et al. (2019) demonstrated that conflict with parents increases the likelihood of adolescent depression, even when accounting for the depressive levels of both parent and adolescent at baseline. Other studies have also demonstrated a negative association between adolescent mental health and conflict in the parent-adolescent relationship (Zhang et al., 2018). Some studies have suggested that family climate may be even more influential than genetic factors in the development of depression for adolescents (Natsuaki et al., 2014). Taken as a whole, the research has consistently demonstrated that relationship quality matters immensely to adolescent outcomes.

### **Understanding the Connection Between Parenting and Adolescent Mental Health**

Even as research provides insight into the ways that parent-adolescent relationship quality can support positive outcomes and protect against negative ones, recent research also indicates that the rates of both anxiety and depression are growing for adolescents at a considerable rate (Mojtabai et al., 2016; Twenge et al., 2017). Up to one-third of adolescents meet criteria for a diagnosable anxiety disorder (NIMH, 2018) with some studies suggesting an average onset of as early as 6 years old (Merikangas et al., 2010). The onset of mood disorders and depressive symptomatology occurs only a couple years later, with an average onset age of 13 (Merikangas et al., 2010).

Several studies have examined the potential mediators between parenting and adolescent mental health symptoms (i.e., the mechanisms through which parenting affects these outcomes). One of the elements that makes mediation somewhat complicated to study in the relationship

between parent-adolescent relationship quality and mental health outcomes is that studies often place elements of parent-adolescent relationship quality in roles of mediation. For example, time spent together and parent supportiveness have both been studied as mediators in the relationship between parent-adolescent relationship quality and adolescent mental health (Cutrín et al., 2022; Hair et al., 2008), when these elements might be better understood as components of relationship quality.

In general, parental factors seem to be studied more often for their influence on parent-adolescent relationship quality than adolescent factors are, perhaps because of the inherent power differences present in the parent-adolescent relationship. This is also true of the research that attempts to explain the change mechanisms in the relationship between parent-adolescent relationship quality and adolescent mental health, though there are some studies that focus on adolescent-level factors in this process (LaMontagne et al., 2022; Moed et al., 2017). One area that has received no previous attention in studies of mediation and could be important in this process is that of autonomous value-driven decision-making (i.e., the development of internal values). Extant research tells us much about the ways in which parenting can support the development of autonomy for adolescents, and research also demonstrates how important autonomy can be for mental health outcomes (Ingulgia et al., 2014; Liu et al., 2022; Vasquez et al., 2016; Vrolijk et al., 2020). However, we do not yet know much about the ways in which these factors operate together over time to shape adolescent outcomes.

### **Autonomous Decision Making and Adolescent Mental Health/Outcomes**

In self-determination theory (Deci & Ryan, 2000), the concepts of internal and external value systems are often talked about in terms of intrinsic and extrinsic motivation. Intrinsic motivation refers to those things that a person does simply because they are interested in and

enjoy doing them. Extrinsic motivation refers to a broader category of motivations that balance a sense of rewards and punishments alongside a sense of internal norms and values. The factors that are associated with extrinsic motivation can be divided into two sets of factors characterized by whether the person's choice to engage in a behavior is motivated by a sense of control/coercion or a sense of autonomy. This distinction between controlled motivation and autonomous motivation is, in many regards, the central distinction in self-determination theory (Deci & Ryan, 2008). Under the umbrella of control as a motivating factor, "external regulation" is used to refer to situations where a person's motivations are centered on rewards and punishments they may receive at the hands of others, while "introjected regulation" refers to behavior that is motivated by a desire for increased self-esteem and the avoidance of the difficult feelings of disappointing others in moments of failure (Ryan & Deci, 2020). The two types of regulation associated with autonomous motivations are "identified regulation" and "integrated regulation." In identified regulation, an individual's view of the behavior as valuable leads to their decision to engage in it. Integrated regulation is similar to identified regulation but goes a step further, where the behavior is both seen as valuable and is also a behavior that aligns with the other values and desires the person holds as important – i.e., it is more fully integrated into their lifestyle (Ryan & Deci, 2020).

This experience of autonomous decision making is the essence of value-based decision making because value-laden choices that are made autonomously represent a level of congruence between an individual's internalized beliefs and their behavior. Research indicates that this kind of autonomy has an overall positive impact on adolescent health. For instance, autonomy is associated with reduced levels of depression (Liu et al., 2022), increased levels of academic functioning (Manganelli et al., 2019; Núñez & León, 2019), and adaptive psychosocial

functioning (Vasquez et al., 2016). An adolescent's report of internalizing symptoms has been shown to be lower when their perception of parental autonomy support is higher (Vrolijk et al., 2020). It has also been noted in the research literature that parental beliefs regarding their child's development play a strong role in whether they parent in an autonomy-supportive fashion, as parenting of this nature is based (at least in part) on a belief that children have a natural drive toward value development and internalization (Joussemet et al., 2008). Furthermore, a study by Soenens et al. (2007) drew attention to the distinction between the promotion of independence and promotion of volitional functioning from parents toward their adolescents. These concepts are highly related, but the authors demonstrate a differential impact on adolescent well-being when examining these separately. Their findings demonstrated that the promotion of volitional functioning (i.e., decisions made from a place of personal belief and resonance) is associated with higher levels of well-being compared to the promotion of independence (i.e., decisions solely made from a desire to be seen as an independent decision maker). This element of volitional functioning is an important factor in understanding the relationship between autonomy and adolescent outcomes, as depression tends to increase for adolescents who perceive their parents to be restrictive over decisions that they feel should be theirs to make (Eagleton et al., 2016). We also see implications for anxiety in the research in this area. Both introjected and external regulation are more prevalent for anxious adolescents than for non-anxious adolescents (Dickson & Moberly, 2013). Anxious adolescents also experience a greater level of avoidance goals, in which they experience an increase in their desire to avoid certain negative outcomes as a motivation (Dickson, 2006). It is evident from the extant research that internalized values (played out as autonomous value-driven decision-making) are predictive of a range of positive outcomes for adolescents.

## **The Role That Parenting Plays in Value Development**

Adolescence is a time in which children often experience accelerated development of their value systems (Daniel et al., 2012; Padilla-Walker, 2007). Parenting plays an important role in this process, and increasingly, researchers have come to view this as an interactive, relationship-centric process between parents and children rather than a passive process in which success is seen as an adolescent adopting the same values of their parent (Knafo & Galansky, 2008; Kuczynski & Navara, 2006). Family connectedness matters in this process, as more connected families experience higher levels of both intergenerational and intragenerational value transmission (Roest et al., 2009). Parental warmth and responsiveness play a role here as well, as value adoption is more likely to occur between parents and adolescents when the parents use an authoritative parenting style (Pinquart & Silbereisen, 2004; Schonpflug, 2001). Additionally, parental warmth is associated with increased levels of prosocial behavior toward both family and friends, with maternal warmth being more strongly associated with prosocial behavior toward family and paternal warmth being more strongly associated with prosocial behavior toward friends (Padilla-Walker et al., 2016). Hardy et al. (2008) found that parental involvement was positively associated with integrated and identified regulation, whereas structure was positively associated with external and introjected regulation, a finding that the authors conjectured may be due in part to the way that elements of structure can sometimes be seen as a mechanism of control in response questionnaires. An abundance of research supports the idea that encouragement of autonomy leads to greater internalization of values while control leads to more externally-based decision making (Hoffman, 2000). Some scholars also suggest that the rise in value-based decision-making during adolescence is in part attributable to an adolescent's greater

capacity for cognitive complexity (Davidow et al., 2018). Parenting styles also interact with child temperament to influence early moral thinking (Yoo & Smetana, 2021).

Socialization practices may lead to some sex-based differences in how values are prioritized - females may be more likely to perceive relational factors as primary whereas males may be more likely to perceive issues connected to success and achievement as primary (Barni et al., 2011). It is also evident that a parent's willingness to discuss the "why" behind certain value-based decisions encourages the child's own development of a moral center (Smetana, 1999). The internalization of desired values has often been seen as one of the hopeful outcomes of parenting, which includes elements of both identification (i.e., what the value is) and acceptance (i.e., the child deciding they want to adopt this value for themselves). Grusec and Goodnow (1994) describe acceptance as balancing three elements: appropriate perception of the value by the child, motivation to comply with this value, and a sense that the value is not being imposed on them but is rather one that they have chosen autonomously (i.e., a value that is not adopted under premises of control). Studies have shown that this final component of autonomy, sometimes referred to as "volitional functioning", is positively associated with a child accepting parental values (Barni et al., 2011), with some studies further indicating that this effect is more pronounced for maternal values (Barni et al., 2022).

### **Self-Determination Theory (Autonomy, Competence, Connection/Relatedness)**

Self-determination theory (Deci & Ryan, 2000; Deci & Ryan, 2008; Ryan & Deci, 2000; Ryan & Deci, 2017) posits that autonomy, competence, and connection (relatedness) are all influential factors that combine to produce positive outcomes for individuals. Within self-determination theory, each of these three elements is conceptualized as a core psychological need for individuals. Autonomy is primarily concerned with an individual's ability to regulate their

own choices, decisions, actions, and experiences from a non-coerced place of congruence (Ryan & Deci, 2017). Competence is seen as being about an individual's sense of mastery or effectiveness within a variety of different contexts (Ryan & Deci, 2017). Relatedness refers to an individual's sense that they are socially connected. More specifically, in self-determination theory, relatedness is understood as involving both an individual's mattering to others and having others to whom they matter (Ryan & Deci, 2017). Self-determination theory maintains that psychological health results from a person being able to meet each of these three needs in their life. As an extension of this, self-determination theory predicts negative psychological outcomes for individuals who are unable to experience these things, tracing the origin of psychopathology to a deficit in one or multiple of these areas (Vansteenkiste & Ryan, 2013).

The application of self-determination theory to the three constructs being looked at in this study – parent-adolescent relationship quality, autonomous value-driven decision-making, and adolescent internalizing experiences – provides us with direction for testing the relationship between these constructs, as we would expect to see higher levels of parent-adolescent relationship quality and autonomous value-driven decision-making working together to produce positive psychological outcomes for the adolescent (i.e., lower levels of internalizing experiences). Psychological adjustment/internalizing experiences are predicted as an outcome by self-determination theory, but self-determination theory does not offer insight into the direction of effects between relationship quality and autonomous value-driven decision-making on psychological adjustment – it only asserts that they are both important. In this study, the direction of effects is being tested from relationship quality to autonomous value-driven decision-making to internalizing experiences based on the previously reviewed research which demonstrates that parent-adolescent relationship quality is associated with adolescent

autonomous decision-making and adolescent autonomous decision-making is associated with adolescent mental health outcomes .

Other studies have previously used self-determination theory to explore factors related to parent-adolescent relationship quality, autonomy, and adolescent internalizing experiences. For example, Inguglia et al. (2014) found that parental support predicted autonomy and relatedness in late adolescence and emerging adulthood. They explored the differential impact both autonomy and relatedness had on various indicators of psychological distress and demonstrated that both were associated with lower levels of depression. This study explored these associations using cross-sectional data with direct paths from both autonomy and relatedness to the health and behavioral outcomes of interest. The authors tested the moderating role of age on these associations and found no considerable differences between the adolescents and emerging adults in their study regarding the influence of autonomy and relatedness on depression. Similarly, other studies have also demonstrated that both autonomy and relatedness help to reduce psychological distress but have not demonstrated significant interactions between these two constructs (Noom et al., 1999). Although these studies examined relationships among variables examined in the current study, they did not examine autonomous value-driven decision-making as a potential mediator, nor did they explore these associations longitudinally.

### **Testing the Moderating Role of Adolescent Sex on the Associations Between Relationship Quality, Value-Driven Decision-Making, and Internalizing Experiences**

Previous research has established that there are some noteworthy differences in an adolescent's experiences of the core constructs in this study based on the adolescent's sex. In a meta-analytical review of previous research around parenting practices and adolescent autonomy, Endendijk et al. (2016) found no significant association between gender and a



parent's autonomy-supportive strategies, though the authors do establish that historically, these differences may have been more salient, with females reporting higher levels of perceived monitoring from their parents (Webb et al., 2002). However, research has established that there are considerable differences in the experience of internalizing experiences based on adolescent sex, with adolescent females consistently reporting higher levels of internalizing symptoms than male adolescents (Lewis et al., 2015; NIMH, 2018). Research has also established that there are some differences in the ways in which maternal-adolescent relationship quality may influence the experience of adolescent internalizing experiences by sex. For example, Apsley and Padilla-Walker (2020) demonstrated that maternal internalizing symptoms are more of a risk factor for a female's experience of internalizing symptoms than a male's experience of the same. This study was conducted using different waves of the same data set that the present study is based on, which further highlights the need to consider the ways in which the relationships between relationship quality, adolescent autonomous value-driven decision-making, and adolescent internalizing experiences may be moderated by adolescent sex.

### **Present Study**

To the author's knowledge, no study to date has looked at the role that autonomous value-driven decision-making plays in the relationship between parent-adolescent relationship quality and adolescent internalizing experiences. In this study, autonomous value-driven decision-making will be looked at as a mediator in the relationship between parent-adolescent relationship quality and adolescent internalizing experiences. Understanding the role that autonomous value-driven decision-making plays in this process has the potential to inform the work of both family life educators and clinical practitioners who work with parents that are seeking help in supporting the psychological health of their teens. We know that adolescents feel

closer to their parents when they feel accepted and sense that they can talk to their parents about their concerns (McKenna et al., 2021), and we also know that this kind of open communication is predictive of lower levels of internalizing experiences (Ioffe et al., 2020). Additionally, we also know that the quality of this relationship is positively associated with an adolescent's level of autonomous decision-making (Hardy et al., 2008; Hoffman, 2000; Inguglia et al., 2014; Padilla-Walker et al., 2016), which in part can be attributed to the adolescent not feeling the pressure to make choices based on a sense of external expectations or demands, but rather an internal sense that something is valuable or worthwhile in its own right. If an adolescent feels accepted by their parent, then they will feel less like they need to behave in certain ways to earn that acceptance (external motivations), creating permission and space for adolescents to feel they can be themselves in the context of their relationship with their parent (internal motivations). Additionally, when the parent-teen bond is strong, the teen may be more receptive to and less resentful of the influence of their parent to steer them in the direction of making choices the parent prefers because it comes from a place of guidance and not a place of control (Pinquart & Silbereisen, 2004; Schonpflug, 2001; Roest et al., 2009). Furthermore, if the results demonstrate that autonomous value-driven decision-making partially mediates the relationship between parent-adolescent relationship quality and internalizing experiences, we will gain additional understanding about the nuances of how parent-adolescent relationship quality impacts adolescent mental health outcomes. An understanding of the mediating role of autonomous value-based decision making between parent-adolescent relationship quality and adolescent internalizing experiences could guide the work of parenting educators and other helping professionals to be more targeted in helping parents strengthen areas of the parent-child

relationship that are instrumental in the development of adolescent autonomous value-based decision making.

Based on some of what we know from previous studies detailing the association of parent-adolescent relationship quality with adolescent internalizing experiences and the general direction of these effects predicted by self-determination theory, the following hypotheses guided this study:

- H1: Higher levels of adolescent reported parent-adolescent relationship quality at Wave 4 will predict higher levels of adolescent autonomous value-driven decision-making at Wave 5.
- H2: Higher levels of adolescent autonomous value-driven decision-making at Wave 5 will predict lower levels of adolescent internalizing experiences at Wave 6.
- H3: Significant indirect effects will be detected from adolescent reported parent-adolescent relationship quality at Wave 4 and adolescent internalizing experiences at Wave 6 through adolescent autonomous value-driven decision-making at Wave 5.

In addition to these hypotheses, one additional research question will be explored concerning the manner in which these associations may function differently based on the adolescent's sex. Given that previous research has been mixed on the extent to which sex is associated with the constructs being looked at in this study (Apsley & Padilla-Walker, 2020; Endendijk et al., 2016; Lewis et al., 2015; NIMH, 2018; Webb et al., 2002), no hypothesis is being offered for this question. Instead, the study will focus on answering the following research question: Does sex moderate the relationship between relationship quality, autonomous value-driven decision-making, and adolescent internalizing experiences?

## **Chapter 3 - Methods**

### **Data and Participants**

Data for this study was drawn from the Flourishing Families Study, a longitudinal research project sponsored by Brigham Young University. Recruitment for the initial participant pool was done primarily through the use of a purchased telephone survey database (Polk Directories/InfoUSA). Wave 1 of the study initially included 500 families from a northwestern city in the United States, 423 of which were recruited via this database. The additional 77 families were recruited via other means such as referrals and advertisements to increase the socioeconomic and ethnic diversity of the sample. The 423 families recruited from the purchased database were considered eligible for the study if there was a residential child between the ages of 10 and 14 and the family lived in a target census tract that mirrored the socioeconomic and racial diversity of local school districts. Outside of this initial round of participants, other families were included from an additional northwestern city to increase the size and diversity of the participant pool, resulting in an initial sample of over 600 families. Once families consented to participation, initial data gathering occurred in the family's home. Interactions were video recorded to capture observational data and surveys were administered in the home as well. This allowed the research team to check responses as they were being submitted and follow up on any missing elements, leading to an overall low level of missing data in the initial waves of collection. This method of data collection persisted through Wave 5 of the study, but adaptations were made at Wave 6 to shift the survey to being collected electronically to account for the target children reaching an age at which many were beginning to move out of their parent's home. Data for the present study is being taken from Wave 4, Wave 5, and Wave 6.

### **Demographic Characteristics**

For this study, only adolescents whose biological, step, or adoptive mother was the reported primary caregiver are being included in the analysis. On a theoretical level, research has routinely suggested that the maternal relationship is more strongly associated with the outcomes being looked at in this study than the paternal relationship is (Barni et al., 2011; Connell & Goodman, 2002; Natsuaki et al., 2014). On a statistical level, the disparity in the split of mothers and fathers reporting themselves as the primary caregiver was vast, with only 9 fathers meeting the other elements of the inclusion criteria. Given this large of a divide in the sex of parents who were categorized as the primary caregiver and the aforementioned research on the salience of the maternal relationship, the decision was made to only include maternal primary caregivers in the analysis. In the Wave 4 sample, this created an initial sample size of 556. The z-scores for the means of the scales being used in this study were evaluated for outliers, with any participant whose scores exceeded an absolute value of 3 being removed (Mahmood, M.S., 2022). This resulted in the removal of an additional 10 participants: 5 respondents were removed based on their outlying scores on the relationship quality measure, 2 were removed for outlying scores on the internal values measure, and 3 were removed for outlying scores on the anxiety measure. Based on the decision to test a moderated mediation model based on adolescent sex, an additional 19 adolescents were removed from the analysis who had not indicated their sex. This resulted in a final sample size of 527 participants for the study. Participants for this study are being drawn from Wave 4, Wave 5, and Wave 6. Inclusion was based on participation in the study at Wave 4, when the target child was at an average age of 14.28 (range of 12-17). Full demographic breakdown of the study participants can be seen in Table 1.

The data were evaluated for patterns of missingness based on the included scales from each wave. At Wave 4, 3 respondents were missing responses to the scale, at Wave 5, 15

respondents were missing, and at Wave 6, no respondents were missing. Given the limited nature of this missingness compared to the overall sample size, all respondents were left in the data with a plan to allow for their estimation during the analysis.

## **Measures**

### ***Parent-Adolescent Relationship Quality***

Parent-adolescent relationship quality is being examined in this model based exclusively on adolescent self-report. Research has indicated that there are frequent discrepancies in reports between parents and children when looking at constructs similar to relationship quality (De Los Reyes, 2011) and from a theoretical standpoint, the sense the adolescent has of the relationship is the core construct of interest in this study. Additionally, previous research has demonstrated that adolescent report of family dynamics is more predictive of negative outcomes than parent report (McLeod et al., 2007; McLeod et al., 2007), indicating that a perception bias may play a role in shaping differences between parents and their children. The six questions used for the relationship quality measure in this data were adapted from a more generalized social connectedness measure (Lee et al., 2001). Adolescents responded on a standard Likert scale ranging from (1) strongly disagree to (5) strongly agree to the following items: “Even though I am very close to my parent, I feel I can be myself”, “I feel so comfortable with my parent that I can tell him/her anything”, “My parent and I have some common interests and some differences”, “I am comfortable with some degree of conflict with my parent”, “Although I am like my parent in some ways, we are also different from each other in some ways”, and “While I like to get along with my parent, if I disagree with something he/she is doing, I usually feel free to say so”. The alpha for the scale of these 6 items at Wave 4 was .74 in the male sample and .66

in the female sample. A latent variable was created for this measure with each response item as a unique indicator.

### ***Autonomous Value-Driven Decision-Making***

The measure for adolescent autonomous value-driven decision-making was created from items taken from the SRQ-A (Grolnick et al., 1997). Eight items were used to create this scale for this analysis. The scale for internal values (i.e., autonomous value-driven decision-making) can be used as either a general internal scale or can be further subdivided to look at integrated and identified subscales. For this study, the larger 8-item measure for internal value systems was used. Response options were on a four-point Likert scale that ranged from (1) not at all true to (4) very true. The eight items for the internal scale were as follows: “I try to be nice to others because I think it's important to be a nice person”, “I try to be nice to others because I will feel bad about myself if I am not nice”, “I try to be honest because I think it’s important to be honest”, “I try to be honest because I will feel bad about myself if I am not honest”, “I try to avoid drinking, drugs, smoking, etc. because I think it’s important to avoid those behaviors”, “I try to avoid drinking, drugs, smoking, etc. because I will feel bad about myself if I do any of those things”, “I choose good friends (parents approve) because I think it’s important to have friends who are a good influence”, and “I choose good friends (parents approve) because I will feel bad about myself if I have friends who are a bad influence.” The alpha value for these eight items at Wave 5 was .77 for males and .76 for females.

### ***Adolescent Internalizing Experiences***

In this study, both adolescent depression and adolescent anxiety are being measured by self-reported scores. Previous research has demonstrated frequent discrepancy in parent and child reports of the child’s mental health symptoms, with adolescents sometimes reporting higher

symptomatology in a self-report than parents report on their behalf (Baumgartner et al., 2020). In light of this, adolescent report is being used in order to more accurately capture the adolescent's experience of internalizing symptoms.

Adolescent's depression was calculated from a 20-item CES-DC measure (Weissman et al., 1980). Adolescents were asked to identify how often they had experienced a series of statements during the past week, with response options of (1) not at all, (2) a little, (3) some, and (4) a lot. Sample response items included statements like "I was bothered by things that don't usually bother me", "I wasn't able to feel happy, even when my family or friends tried to help me feel better", "I felt like I was too tired to do things", and "I felt lonely, like I didn't have any friends". Relevant items were recoded such that the direction for all responses indicated higher scores that represented higher levels of depression. The alpha value for these 20 items at Wave 6 was .92 for both males and females. A latent variable will be created for this measure by using a balancing approach to group response items into three indicators, the commonly recommended amount for a balancing approach (Little et al., 2013). To create the parcels, a CFA of the depression measure was conducted, and all indicators were ranked from highest to lowest by their loading factors, which all ranged in acceptable levels of .31 to .83. These indicators were then grouped into parcels by pairing the highest loading indicator with the lowest loading indicator, the second highest loading indicator with the second lowest loading indicator, and so forth until all items were grouped into three parcels that were used in the analysis for the full model. The full list of question items as well as the parcel grouping is provided in Table 2.

Adolescent anxiety was measured with a 6-item generalized anxiety disorder subscale of the Spence Child Anxiety Inventory (Spence, 1998). Adolescents were asked to identify how often they experienced symptoms of anxiety with response options of (0) never, (1) sometimes,



(2) often, and (3) always. The statements children responded to included the following items: “I worry about things”, “When I have a problem, I get a funny feeling in my stomach”, “I feel afraid”, “When I have a problem, my heart beats really fast”, “I worry that something bad will happen to me”, and “When I have a problem, I feel shaky”. The alpha value for these 6 items at Wave 6 was .79 for males and .85 for females. A latent variable was created for this measure with each response item as a unique indicator.

## **Controls**

### ***Mother’s Anxiety and Depression at Baseline***

Previous research has shown a link between parental depression and adolescent internalizing symptoms (Brennan et al., 2002; McAdams et al., 2015). In light of this, the proposed model for this study includes a control to account for the influence that parental depression may have on adolescent internalizing experiences. Maternal depression was calculated from an 11-item scale modified from the CES-D scale (Radloff, 1977). Respondents were asked to rank how often they had experienced each statement in the previous week with response options of (1) never, (2) some of the time, and (3) most of the time. Items included the following prompts: “I did not feel like eating; my appetite was poor”, “I felt depressed”, “I felt everything I did was an effort”, “My sleep was restless”, “I was happy”, “I felt lonely”, “People were unfriendly”, “I enjoyed life”, “I felt sad”, “I felt that people disliked me”, and “I could not get going”. Items were reverse coded for the happy and enjoyed life responses so that higher numbers indicated higher experience of depression in the past week. The mean score was computed for the scale from these 11 items, with an alpha value of .83 in the male group and .80 in the female group.

Due to the frequent high correlations seen between anxiety and depression and the decision to look at both outcomes in this study, maternal anxiety was also included as a predictor at baseline. Maternal anxiety was calculated from an 8-item scale based on the Burns Anxiety Inventory (Burns, 1989). Respondents were asked to rank how often they had experienced each statement in the previous week with response options of (0) not at all, (1) somewhat, (2) moderately, and (3) a lot. Items included the following prompts: “Anxiety, nervousness, or worry”, “Feeling that things around you are strange, unreal, or foggy”, “Feeling detached from all or part of your body”, “Sudden unexpected panic spells”, “Apprehension or a sense of impending doom”, “Feeling uptight or on edge”, “Difficulty falling or staying asleep”, and “Racing thoughts or having your mind jump from one thing to the next”. The mean score was computed for the scale from these eight items, with an alpha value of .75 for the male group and .79 for the female group.

### ***Child’s Anxiety and Depression at Baseline***

Given that trajectories for anxiety and depression among adolescents indicate some level of expected consistency over time (Prenoveau et al., 2011), both of these were included as controls. While these constructs were examined as latent variables within the main model of the study, they were included as controls by the mean scores for the scales at Wave 4 to preserve statistical power for the main model. There are no differences to the scales for these items compared to what was reported in the measures for the main variables of the model. The mean score for depression was computed for the scale to use as the control variable, with an alpha value of .92 for males and .90 for females for this 20-item construct at Wave 4. The mean score for anxiety was computed for the scale to use as the control variable, with an alpha value of .80 for males and .83 for females for this 6-item construct at Wave 4.

The CES-DC cut-off score for a child or adolescent showing significant symptoms of depression is a score above 15 (Weissman et al., 1980); however, the CES-DC typically asks questions on a 0-3 scale, whereas the questions for the Flourishing Families study were asked on a 1-4 scale. As such, a comparable criterion for this study would be a score of 35 or higher, given that a respondent indicating the lowest possible option in each question item would have a baseline score of 20 as their lowest possible score. Based on this adjusted criteria, 21.07% of males and 32.71% of females met criteria for depression at baseline.

### ***Child's Race***

Child's race was reported on at the first wave of the study with six response options including European American, African American, Hispanic, Asian American, Other, and Multi-Ethnic. Given the small proportion of respondents who indicated a category other than European American or African American, two primary groupings of "White" and "Black" were created with the remaining categories serving to create the "Other" category, which were omitted from the design and represented as intercept values in the final model.

### **Analysis Plan**

A structural equation modeling (SEM) design was used to test for the mediating role of adolescent autonomous value-driven decision-making in the relationship between parent-adolescent relationship quality and adolescent internalizing experiences. These tests were conducted by modeling latent variables in MPlus Version 8.8 (Muthén & Muthén, 2017) for each of the core constructs in the study. While these tests could have been run with mean scores, modeling the core constructs as latent variables allowed for the creation of primary model variables that were assumed to be error free (Kline, 2016). The Flourishing Families data for adolescent anxiety and depression contain different numbers of response items, with depression

being measured through a robust set of 20 response items. To preserve some of the power needed for this model to run efficiently, the response items for depression were parceled into three groups representing mean scores with a balancing approach (Little et al., 2013). Table 2 shows the breakdown of questions that went into each parcel.

A full-information maximum likelihood approach was used to account for missing data so that all available data were included for analysis in the final model (Acock, 2005). The MLR estimator (also referred to as S-B scaling methods) was used to account for some of the response items for latent variables having less than five response options, as this estimator is robust to non-normality and provides more trustworthy results when using ordered categorical variables (Finney & DiStefano, 2006). MLR was also an appropriate choice because the data were approximately normally distributed (skewness values ranged from -.71 to 1.01 and kurtosis values ranged from -.55 to .38) and each scale item for the latent variables included at least four response options (Finney & DiStefano, 2006).

Prior to running a full structural model, a confirmatory factor analysis (CFA) was tested to assure that the latent variable structure was a good fit to the data and to assess the overall correlations between the core constructs of this study. The model was considered to fit well if it met the following accepted metrics:  $CFI \geq .90$ ,  $SRMR \leq .10$ , and  $RMSEA \leq .08$  (Hu & Bentler, 1999; Kline, 2016). The chi-square test was also evaluated, though the results of this test were expected to be significant due to the large sample size and complexity of the model (Kline, 2016). Given that previous research has indicated some sex-related differences in the ways that adolescents experience both value development and the development of internalizing symptoms (Barni et al., 2011; Lewis et al., 2015), a multigroup test of moderated mediation was used to test for the mediating role of adolescent autonomous decision-making in the relationship between

maternal-adolescent relationship quality and adolescent mental health outcomes. The use of a multigroup model allowed for the detection of any sex-based differences in the associations being explored in this study.

The first step in conducting a test of moderated mediation is to establish at least partial measurement invariance, which indicates that the constructs in the study are measuring similar things for both males and females. To do this, an initial CFA with no constraints on loading factors or intercepts was conducted to establish baseline model fit. An unconstrained model will always fit better than a model with constraints, but the addition of constraints to loading factors and intercepts allows for changes in the model fit criteria to be evaluated to determine if the constructs are operating similarly across the different groups in the model. To establish partial measurement invariance, it must be demonstrated that including constraints on some loading factors and intercepts does not significantly reduce the fit of the model. Once the unconstrained model fit well based on the aforementioned fit indices, constraints to loading factors and intercepts were added and changes to the model fit were evaluated. Decreases in the CFI of .01 or greater indicate that a model fits significantly worse with the constraints in place (Cheung & Rensvold, 2002), so the CFA was evaluated based on this criteria and any constraints that did not lead to significantly worse fit were left in place.

Once adjustments were made to the CFA and an acceptable structure was confirmed, the full structural test was conducted. At this stage, all constraints that were identified in the previous testing were left in place, but the direct effects/paths between the latent variables were tested as well. Similar to the CFA process, these direct paths were constrained and evaluated for model fit, this time by looking for significant changes in the chi-square value. After evaluating and refining the model based on these changes to chi-square values, the error variances were also

constrained and tested for their impact on model fit, with any constraints that did not produce significant changes to the chi-square value being left in place for the final model. In addition to testing parent adolescent relationship quality as a predictor of adolescent autonomous value-driven decision-making and adolescent autonomous value-driven decision-making as a predictor on adolescent mental health outcomes, indirect effects from parent adolescent relationship quality to adolescent internalizing were tested via the mediating pathway of adolescent autonomous value-driven decision-making. When using MLR as an estimator, the preferred bias-corrected bootstrapped confidence intervals method of testing mediation cannot be used in Mplus. Instead, the Delta Method (sometimes referred to as the Sobel Method) will be used test for indirect effects (Sobel, 1987).

## Chapter 4 - Results

A series of independent samples t-tests were conducted to determine if there were any statistically significant differences in the control variables between males and females. There were no statistically significant differences between sexes with regard to the baseline levels of maternal depression or anxiety. There was, however, a statistically significant difference in the levels of anxiety between male and female adolescents at baseline, with females reporting higher levels of anxiety ( $M = 1.02$ ,  $SD = .58$ ) than males ( $M = .74$ ,  $SD = .50$ ); Welch's  $F(1, 515.12) = 36.39$ ,  $p < .001$ . Similarly, there were significant differences in baseline depressive symptoms, with females reporting higher levels of depression ( $M = 1.67$ ,  $SD = .50$ ) than males ( $M = 1.54$ ,  $SD = .45$ ), Welch's  $F(1, 520.37) = 9.75$ ,  $p = .002$ .

A series of independent samples t-tests were also conducted on the mean scores for the scales of each of the core constructs in the study. There was a significant difference between males and females regarding relationship quality ( $t(524) = -3.41$ ,  $p < .001$ ), with females ( $M = 4.03$ ,  $SD = .58$ ) reporting significantly higher levels of relationship quality than males ( $M = 3.85$ ,  $SD = .61$ ). There was a significant difference between males and females regarding autonomous decision-making ( $t(524) = -3.90$ ,  $p < .001$ ), with females ( $M = 3.26$ ,  $SD = .47$ ) reporting significantly higher levels of autonomous decision-making than males ( $M = 3.09$ ,  $SD = .50$ ). There was likewise a significant difference between males and females regarding anxiety as an outcome, with females ( $M = 1.33$ ,  $SD = .68$ ) reporting significantly higher levels of anxiety than males ( $M = .91$ ,  $SD = .52$ ); Welch's  $F(1, 503.82) = 66.01$ ,  $p < .001$ . Similarly, there was a significant difference between males and females regarding depression as an outcome, with females ( $M = 1.88$ ,  $SD = .60$ ) reporting significantly higher levels of anxiety than males ( $M =$

1.65,  $SD = .54$ ); Welch's  $F(1, 521.76) = 21.88, p < .001$ . At Wave 6, 49.62% of female and 27.97% of male adolescents met the criteria for significant levels of depressive symptoms.

### **Establishing Partial Measurement Invariance**

Before testing for moderation in a structural equation model, it is essential to determine the constructs are conceptualized similarly across populations (Little, 2013). Initial CFAs for male and female adolescents were tested separately to determine configural invariance. Both the male and female models indicated acceptable fit with fit indices for the male group at  $\chi^2(196) = 305.47, p < .001$ ; CFI = .94, RMSEA = .046, and SRMR = .06 and the female group at  $\chi^2(196) = 267.13, p < .001$ ; CFI = .97, RMSEA = .037, and SRMR = .06. No changes in the factor structures were needed, thus a fully unconstrained multiple group CFA grouped by adolescent sex was tested next. This fully unconstrained model demonstrated acceptable fit indices of  $\chi^2(423) = 775.92, p < .001$ ; CFI = .91, RMSEA = .056, and SRMR = .07 and served as the baseline model that the models with constraints were tested against and can be seen in Figure 2. The factor loadings for each construct were constrained one construct at a time with any constraints that led to a reduction of .01 or greater indicating the presence of measurement variance (Cheung & Rensvold, 2002). Placing constraints on factor loadings indicated no significant changes to model fit, establishing loading invariance. There were two factor loadings in the autonomous value-driven decision-making measure that loaded slightly lower than the commonly accepted threshold of .30 (Kline, 2016). These factor loadings were left in the final model for two reasons. First, there was not a theoretically coherent reason to exclude these items from their scales, given that they were preestablished measures in the initially collected data. Second, the model consistently produced errors when either of these were removed from the analysis.



With the invariance of factor loadings established, intercepts for each of the core constructs were constrained to be equivalent and similarly evaluated based on changes to the CFI value. Constraints on the anxiety and depression measures led to models with significantly worse fit, so these intercepts were allowed to be freely estimated across groups in the final measurement model, indicating partial intercept invariance. This reflects the well-established finding that adolescent females often experience higher levels of both depression and anxiety than male adolescents do (Lewis et al., 2015; NIMH, 2018) which would lead us to expect the intercepts to vary in these measures. The final measurement model, with everything constrained except for the intercepts for anxiety and depression, demonstrated acceptable fit indices of  $\chi^2(437) = 797.14, p < .001$ ; CFI = .91, RMSEA = .056, and SRMR = .08. Constraints on error variances were not tested in accordance with the recommendations made by Little (2013), given that it may not be reasonable to assume that the random error in each of the indicators is actually the same both over time and between groups. Given that some intercepts varied across groups but not all, the model demonstrates partial measurement invariance, indicating that the constructs in the model are measured in similar ways for both males and females.

### **Testing Moderation of the Structural Paths**

With partial measurement invariance established, the full structural multigroup model was tested, beginning with fully unconstrained structural paths:  $\chi^2(663) = 1066.62, p < .001$ ; CFI = .91, RMSEA = .049 (90% CI is .043 to .054), and SRMR = .07. Each of the direct paths were tested independently, and no constraints led to a model with significantly worse fit based on chi-square difference testing, with a non-significant test demonstrating that the added constraints did not significantly decrease the fit of the overall model. This led to a final model with fit indices of  $\chi^2(666) = 1069.56, p < .001$ ; CFI = .91, RMSEA = .049 (90% CI is .043 to .054), and

SRMR = .07. Overall, this demonstrates that sex does not appear to moderate the relationships between the variables being considered in this study. Accordingly, the final model retained all constraints on the structural paths with a partially constrained measurement model.

### **Key Findings**

In this final model (Figure 3), standardized factor loadings for each of the constructs ranged from .26 to .91 in the model for males, and .27 to .91 in the model for females (these differ slightly because the final constrained model constrains the unstandardized factor loadings, but not the standardized ones which may then have small differences in estimation). Note that in the following results, the subscripts of “m” and “f” represent male and female standardized results. In the final constrained model, several direct paths were significant. The path from relationship quality to autonomous value-driven decision-making was significant ( $b = .27, p \leq .001, \beta = .42_m, .46_f$ ), as was the path from autonomous value-driven decision-making to depression ( $b = -.21, p < .05, \beta = -.15_m, -.13_f$ ). Overall, the predictors in the model accounted for 20% of the variation in autonomous value-driven decision-making for males and 27% of the variation for females, they accounted for 23% of the variation in depression for males and 27% for females, and 18% of the variation in anxiety for males and 37% for females.

Several of the control variables in the model were significantly associated with one or more of the outcomes in this study. Maternal anxiety at baseline was significantly associated with autonomous decision-making for both males ( $b = -.19, p = .020, \beta = -.19$ ) and females ( $b = -.18, p = .033, \beta = -.21$ ). Adolescent anxiety at baseline was significantly associated with autonomous decision-making for males ( $b = .18, p = .003, \beta = .24$ ), with depression for females ( $b = .21, p = .005, \beta = .20$ ), and with anxiety as an outcome for both males ( $b = .30, p \leq .001, \beta = .41$ ) and females ( $b = .40, p \leq .001, \beta = .49$ ). Adolescent depression at baseline was significantly

associated with autonomous decision-making for males ( $b = -.22, p = .079, \beta = -.25$ ), with anxiety for females ( $b = .15, p = .048, \beta = .16$ ), and with depression for both males ( $b = .51, p \leq .001, \beta = .44$ ) and females ( $b = .40, p \leq .001, \beta = .34$ ). Adolescent race was only significant for females with anxiety and depression. Being racially White was significantly associated with depression ( $b = -.20, p = .045, \beta = -.15$ ) and anxiety ( $b = -.23, p = .010, \beta = -.21$ ). Being racially Black was also significantly associated with depression ( $b = -.34, p = .034, \beta = -.17$ ) and anxiety ( $b = -.33, p = .014, \beta = -.21$ ).

Finally, indirect effects were evaluated to determine if autonomous value-driven decision-making serves as a mediator in the relationship between relationship quality and adolescent internalizing experiences. In the final model, significant indirect effects were detected from relationship quality to depression via a mediating pathway of autonomous value-driven decision-making ( $-.06, 95\% \text{ CI is } -.103 \text{ to } -.014, p = .010$ ), indicating that adolescent autonomous value-driven decision-making has a small but significant role in mediating these associations. There were no significant indirect effects detected from relationship quality to the outcome of anxiety.

## **Chapter 5 - Discussion**

This study demonstrated a significant relationship between three of the four core constructs in this study – relationship quality, autonomous value-driven decision-making, and depression. The final constrained model revealed that as relationship quality increases, the development of autonomous value-driven decision-making increases, and as autonomous value-driven decision-making increases, depression decreases for both male and female adolescents. Additionally, significant indirect effects were detected from relationship quality to depression via the mediating pathway of autonomous value-driven decision-making, demonstrating that internal value development holds some level of explanatory power as a mechanism by which the impact of relationship quality on depression occurs. These findings partially support the hypotheses of this study. Hypothesis 1, that higher levels of relationship quality would predict higher levels of autonomous value-driven decision-making, was supported by the findings. Hypothesis 2, that autonomous value-driven decision-making would predict lower levels of anxiety and depression, and Hypothesis 3, that significant indirect effects would be detected from relationship quality to internalizing experiences through the mediator of autonomous value-driven decision making, were both partially supported. Both of these hypotheses were supported relative to the associations with depression, but they were not supported relative to associations with anxiety. Previous research has demonstrated associations between these constructs that mirror the effects seen in this study (Inguglia et al., 2014; Liu et al., 2022; Noom et al., 1999; Vroljik et al., 2020), but no previous research had explored the mediating role of autonomous value-driven decision-making as explored in this study. The findings in the current study relative to the mediating role of autonomous value-driven decision-making extend what we know about the processes through which the quality of parent-child relationship is related to later adolescent mental health. The

relationship quality variable in this study was comprised of indicators that were thematically centered around the idea of the parent respecting the adolescent as a unique individual, including the felt sense of permission to be oneself in the relationship and a perception of conflict as being comfortable. Additional research would need to be done to extend and test this idea, but it is possible that the parent's general approach to respecting their adolescent in the relationship might be more important to consider than any specific parenting practice that supports autonomy – i.e., this may be as much a way of *being* as a way of *doing* for the parent in their relationship to their teen. Furthermore, this study also demonstrated that the process functions in similar ways for both male and female adolescents, given that constraints on these paths did not lead to a model with significantly lower fit in the analysis. This contributes to the conversation around sex-based differences in both adolescent value development (the development of autonomous value-driven decision-making) and internalizing experiences. Regarding internalizing experiences, research has demonstrated that adolescent females tend to report higher levels of depression and anxiety than adolescent males (NIMH, 2018), which was supported in this model through the decreases in model fit when constraining these intercepts to be the same. Given that the model fit did not significantly decrease in similar ways when direct paths were constrained, this indicates that even though adolescent males and females may be starting at different places in relationship to these experiences, the process captured by this model seems to be unfolding for males and females in a similar way. Regarding differences in autonomous value-driven decision-making, the research has been divided in how differently this process may play out for males and females, with some research supporting a different process (Barni et al., 2011; Fleming, 2005) and other research supporting a more similar process (Endendijk et al., 2016; Vrolijk et al., 2020).

Another important contribution of this study is the finding that this process of parent-adolescent relationship quality predicting adolescent outcomes through the development of autonomous value-driven decision-making seems to carry more predictive power on an adolescent's experience of depression than their experience of anxiety. There are several reasons why this might be the case. Research has indicated that when looking at comparisons between adolescents who experience depression, anxiety, or a comorbidity of the two, depression and comorbid depression/anxiety are more strongly associated with a low quality of parenting than anxiety is by itself (Johnson & Greenberg, 2013). As such, it may be that the lack of relationship quality experienced by adolescents with their mothers has more of a direct association with the development of depression and less of an association with their experience of anxiety. The link between goal frustration and depression may also be part of the equation (Jones et al., 2013) given that a lack of autonomy may implicitly create scenarios where an adolescent feels incapable of doing something they would otherwise truly desire to do. If an adolescent feels that their relationship with their parents creates barriers to things they are autonomously motivated toward, it follows that this would likely lead to feelings of discontentment and depression. This is also consistent with what self-determination theory (Deci & Ryan, 2000; Deci & Ryan, 2008; Ryan & Deci, 2000; Ryan & Deci, 2017) would predict as a consequence of diminished autonomy, as this theory predicts negative psychological outcomes arising from a lack of autonomy (Vansteenkiste & Ryan, 2013). As such, this study seems to support the tenets of self-determination theory when considering the association with depression. The finding that anxiety seems to be less strongly associated with these factors of autonomy and relationship quality does mirror similar findings in previous research (Inguglia et al., 2014; Johnson & Greenberg, 2013). Johnson and Greenberg (2013) speculate that one explanation for this difference could be found

in the way that depression and anxiety influences parent-adolescent relationships differently. They speculate that adolescents with depression, who are more likely to experience a combination of both low positive affect and high negative affect, may find themselves in more conflicted relationships with their parents compared to adolescents with anxiety, who often experience high negative affect by itself. Thus, there may be a reciprocal process at play here for depression that is not as salient for anxiety, in which lower quality relationships increase the likelihood of depression and depression increases the likelihood of lower quality relationships.

### **Implications for Clinicians and Family Life Education**

The items used for the relationship quality measure in this study are primarily centered around the adolescent's sense of self and comfort with differences/conflict in relationship with their primary caregiver. Given the findings of the current study that these elements of the parent-adolescent relationship moderately predict the development of autonomous value-driven decision-making for adolescents, it argues in favor of a parenting approach that encourages a strong development of self-identity. When working with families where there is enmeshment, rigidity, or an expectation to conform to a certain belief system or way of being present, providers may draw upon these findings to provide psychoeducation to parents concerning the kind of harm that might come from this kind of pressure to conform. These findings can be used to help sensitize parents to the value of creating space in the parent-adolescent relationship for supporting adolescent difference of opinion and autonomous sense of self.

Given that the findings of this study demonstrate that a similar process plays out in these associations regardless of the adolescent's sex, it also draws attention to the need to address sociocultural factors that might lead parents to approach parenting sons and daughters differently. There is evidence that the support of autonomy is starting to be associated less and

less by the sex of the child (Endendijk et al., 2016), even though older studies demonstrated that parents were often more supportive of the autonomy of males than females (Webb et al., 2002). When working with parents from sociocultural backgrounds that may trace their roots to historical stereotypes that men are rugged and individualistic while women need protecting (Gallagher & Wood, 2005), it is important to keep this kind of messaging in mind as it has the potential to limit parental autonomy granting in ways that are driven by sex and not necessarily by the developmental stage or demonstrated maturity of the adolescent.

## **Strengths**

### **Study Design**

Being able to establish temporal precedence is an important step in conducting a trustworthy analysis of mediation (Maxwell et al., 2011). This study's use of a large, longitudinal data set made conducting this test possible. The size of the data set also allowed for advanced statistical tests with multiple controls and the creation of latent variables was possible. In particular, the use of latent variable modeling techniques is helpful because it allows for the estimation of the core associations in this study to be conducted between variables that are presumed to be free from error (Kline, 2016).

### **Partialing Out the Influence of Prior Levels of Depression and Anxiety**

Given how strongly previous levels of depression and anxiety serve as predictors for future levels of depression and anxiety (Prenoveau et al., 2011), controlling for both of these internalizing experiences at baseline for both the adolescent and their maternal primary caregiver allowed for these predictors to be partialled out from the core model. This indicates that the associations seen in this study between relationship quality, autonomous value-driven decision-making, and internalizing experiences demonstrates an effect that is strong enough to be



detectable when the associations with previous internalizing experiences are accounted for in the analysis. Being able to control for this on both the adolescent and maternal level is a unique strength of this study, made possible by the dyadic, longitudinal data.

### **Limitations**

#### **Low Number of Items in Relationship Quality and Autonomous Value-Driven Decision-Making Measures**

In reviewing the literature on the value of parent-adolescent relationship quality, studies have demonstrated that there are many factors to consider such as knowledge of the adolescent, warmth, closeness, communication, acceptance, attachment style, and more (Crockett et al., 2007, McGue et al., 2005; McKenna et al., 2021; Padilla-Walker et al., 2016; Shomaker and Furman, 2009; Trahan et al., 2021; Withers, 2020). The relationship quality measure for this study was comprised of six items that focused largely on the adolescent's sense that they could be themselves in relationship with their caregiver, experienced comfortable conflict in this relationship, and sensed some freedom to disagree with their caregiver. If the questions for the relationship quality measure were expanded to include different representations of closeness, the overall strength of the study could be increased by capturing a more complete picture of the elements that contribute to strong relationship quality between parents and adolescents. A study that expands on this while still assessing for the development of autonomous value-driven decision-making would allow for greater understanding about the ways specific dimensions of parent-adolescent relationship quality predict the development of adolescent autonomous value-driven decision-making differentially. For example, a study like this would have the chance to examine the role that time spent together, open communication, warmth and positive regard, or other factors like this play in individually contributing to the development of autonomous value-

driven decision-making, allowing us to parse out if certain factors seem to carry stronger predictive power in that association.

Similarly to the hope for an expanded set of items to measure the construct of relationship quality, the study could be further strengthened if the items in the internal values measure that was used to represent adolescent autonomous value-driven decision-making in this study were expanded to include additional areas that are representative of adolescent autonomous decision-making. The variables in this study focused on the areas of substance abuse, friend selection, honesty, and the importance of being nice, but there are also dozens of other decision-making components that could be included in a measure like this. Furthermore, questions could be asked around the way that adolescent's approach making their own decisions regarding other beliefs and values (e.g., the perception that it is okay to believe different things about religion) that would further allow for the exploration of how parent-adolescent relationship quality creates space for the development of autonomous value-driven decision-making in adolescents.

### **Lack of Racial and Gender Diversity**

The Flourishing Families data, in its initial waves, collected "gender" as a binary distinction of "male" and "female", terms that were renamed in this study to better reflect that they were actually a measure of the child's sex. Given the inability of an adolescent to report any category other than "male" and "female", there are some inherent limitations to capturing the experience of adolescents who understand their gender identity in ways that extend beyond these binary options. Additionally, the data for this study was largely comprised of White adolescents (75.4%) with only 9.5% of adolescents identifying as Black. The remaining 15.1% included Hispanic, Asian American, Other, and Multi-Ethnic. This lack of racial diversity did not permit

the testing of the multigroup model along categories of race, as it was neither ethically nor statistically feasible to use such a small sample for comparisons.

### **Low Loading Factors for Two Indicators**

The standardized loading factors of two indicator items in the autonomous value-driven decision-making measure were lower than the commonly accepted threshold of .30 (Kline, 2016), the lowest of which was a .24. This is a statistical limitation that needs more consideration before this research is disseminated, as it indicates that these items may not be strongly related to the other items in the scale. Unfortunately, the model routinely returned errors with estimations when any of these items were removed, which was what led to the decision to leave them in the design of the model that has been presented here.

### **Potential Differences in Residential Status at Final Wave**

Given the age range of target adolescents in the final wave of the present study, it is likely that some adolescents were still living in the home with their mother when this data was collected, whereas some others would have transitioned out of the home, into the work force, off to college, etc. This potentially introduces several confounding variables for the outcomes at this wave, as other contextual factors unique to non-residential adolescents could influence the adolescent's experience of internalizing symptoms. The natural stressors that come from efforts at launching into adulthood, transitioning to college, moving away from home, and navigating other phase of life challenges unique to this period of development could cause an increase in the experience of anxiety and depression in ways that would not have been relevant at earlier waves of the study. Conversely, the support adolescents receive from the maternal relationship may feel more salient and impactful when the adolescent is still nested in a shared home.

### **Future Directions**

This study has offered a model for understanding the ways in which autonomous value-driven decision-making mediates the relationship between parent-adolescent relationship quality and adolescent internalizing experiences, but it has not explored the ways in which autonomy support can be continued/maintained when there are perceived setbacks in the parent-adolescent relationship. For family life educators and clinicians, it is important to understand more about this process as well. Given the importance that autonomy plays in helping to lower an adolescent's experience of depression, clinicians would benefit from a clearer understanding of the ways in which a parent and adolescent can repair a rupture in trust in this area so that the development of autonomy can continue to be supported in the face of challenges. Qualitative research that seeks a deeper understanding of what this repair process looks like, how socioeconomic and cultural factors influence important elements of this process, and the meaning that both adolescents and parents make of the opportunity to connect through repair conversations would be helpful to practitioners.

As noted previously, some research has demonstrated that male and female adolescents experience differences in the way that they develop in their autonomy, specifically in late adolescence (Fleming, 2005), but some of the more recent research in this area demonstrates a narrowing gap in the ways in which male and female adolescents experience autonomy development (Endendijk et al., 2016; Vrolijk et al., 2020). Future research can focus on better understanding the differences that age and developmental stage can make in this process, potentially following adolescents into early adulthood to determine more about the ways in which relationship quality, autonomous value-driven decision-making, and internalizing experiences continue to influence each other over longer periods of time. Age is a much easier variable to study than developmental stage because of the simplicity of collecting this

information, but a study that seeks to capture elements of developmental stage for exploration of how these factors related to adolescent maturity level interact with this process would be helpful. Additionally, future research can seek to more fully separate out other factors of socioeconomic identity for their influence on this process. For instance, the similarities in males and females seen in this study could be attributable to other shared characteristics that may be more salient to this process than sex, such as economic status, community support, extended family support, etc. It would be helpful to know more about the way these kinds of elements interact to shape trajectories for the model that has been explored here, as these factors could directly inform the interventions of family life educators and clinicians who are working with clients from a diverse range of backgrounds.

### **Conclusion**

Through the lens of self-determination theory and through the use of longitudinal data, this study has increased our understanding of the important role that parent-adolescent relationship quality and autonomous value-driven decision-making play in helping to reduce the likelihood of an adolescent experiencing depression. It has also demonstrated that some of the impact of a high quality parent-adolescent relationship on depression is attributable to the mediating role of autonomous value-driven decision-making, which underscores the need for clinicians and family life educators to support parents and adolescents in their efforts to build close and connected relationships. When these three factors of parent-adolescent relationship quality, autonomous value-driven decision-making, and adolescent depression are considered together, the professionals who are serving these families can offer more nuanced and impactful support to increase adolescent health and well-being.

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## Appendix A - Figures & Tables

**Table 1 Demographics and Descriptive Statistics of Control Variables at Wave 4 (N = 527)**

Variable	%	<i>M</i>	<i>SD</i>
Child's Age (Overall)		14.28	1.07
Female		14.30	1.08
Male		14.27	1.06
Child's Sex			
Female (266)	50.5		
Male (261)	49.5		
Mom Married	73.8		
Mom's Race			
White	80.6		
Black	10.1		
Other	9.3		
Child's Race			
White	75.4		
Black	9.5		
Other	15.1		

\*When respondents were missing data, percentages were based on valid percent measures.

**Table 2 Question Breakdown for Each Parcel of Depression Measure, Wave 6**

Parcel	Question Items
1	I felt sad. I felt like crying. I felt like people didn't like me. It was hard to get started doing things. I was more quiet than usual. I was happy.* I felt like I was just as good as other kids.*
2	I felt down and unhappy. I felt like things I did before didn't work out right. I felt scared. I felt like kids I know were not friendly or that they didn't want to be with me. I was bothered by things that don't usually bother me. I did not feel like eating, I wasn't very hungry. I felt like I couldn't pay attention to what I was doing.
3	I wasn't able to feel happy, even when my family or friends tried to help me feel better. I felt like something bad was going to happen. I felt lonely, like I didn't have any friends. I felt like I was too tired to do things. I didn't sleep as well as I usually sleep. I had a good time.*

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\*Reverse coded.



**Table 3 Correlations of Latent Variables in Baseline Unconstrained CFA**

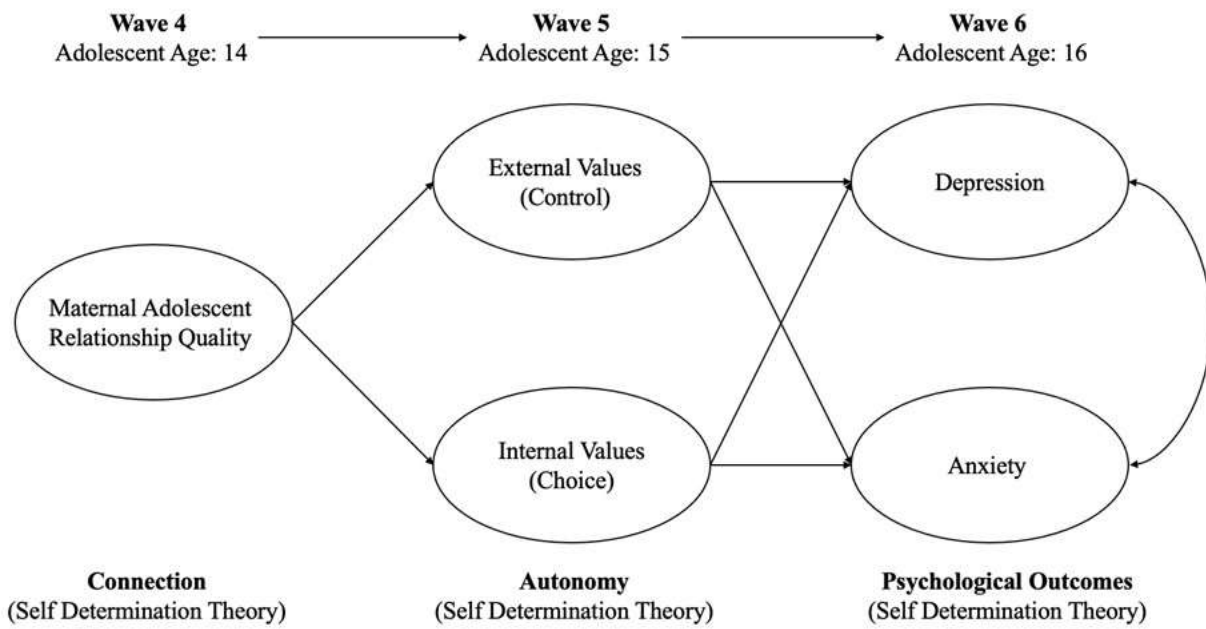
Male Model	1	2	3	4
1. Relationship Quality	-			
2. Decision-Making	.31**	-		
3. Adolescent Depression	-.04	-.27*	-	
4. Adolescent Anxiety	.08	-.04	.33**	-

*Note.* All values rounded to two decimal places. \*\* $p \leq .001$ . \* $p < .05$ .

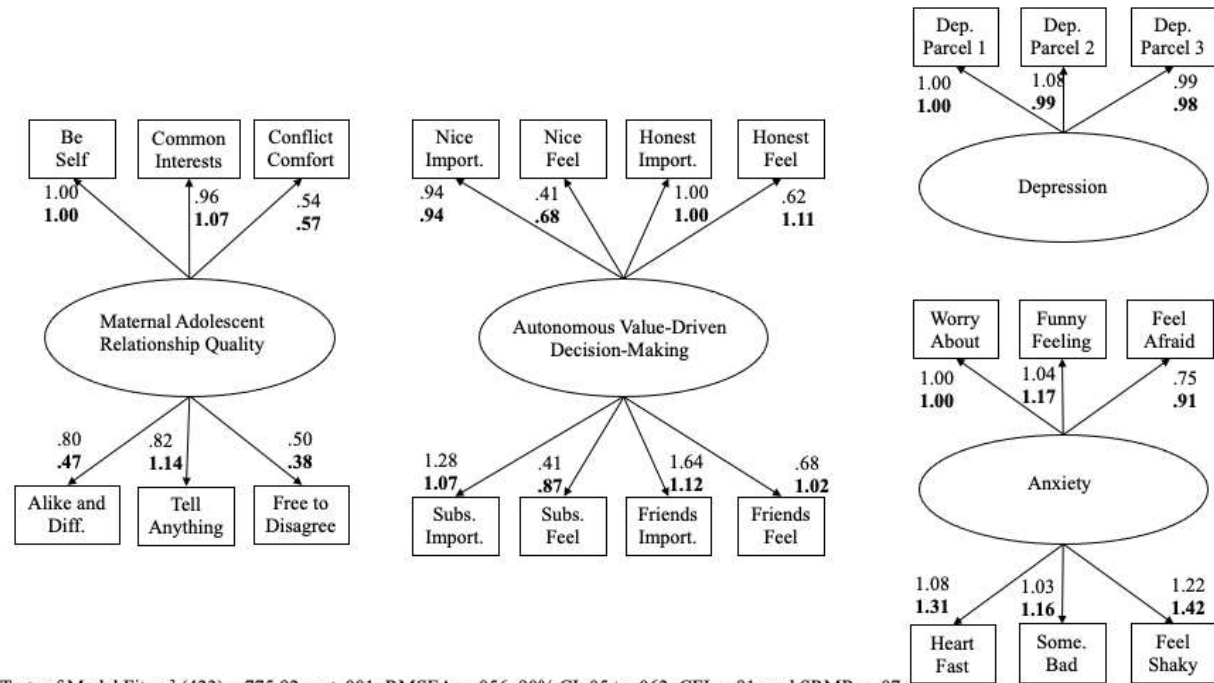
Female Model	1	2	3	4
1. Relationship Quality	-			
2. Decision-Making	.56**	-		
3. Adolescent Depression	-.17*	-.17*	-	
4. Adolescent Anxiety	-.01	.08	.58**	-

*Note.* All values rounded to two decimal places. \*\* $p \leq .001$ . \* $p < .05$ .

**Figure 4 Overview of Proposed Model and Theoretical Framing in Self-Determination Theory**

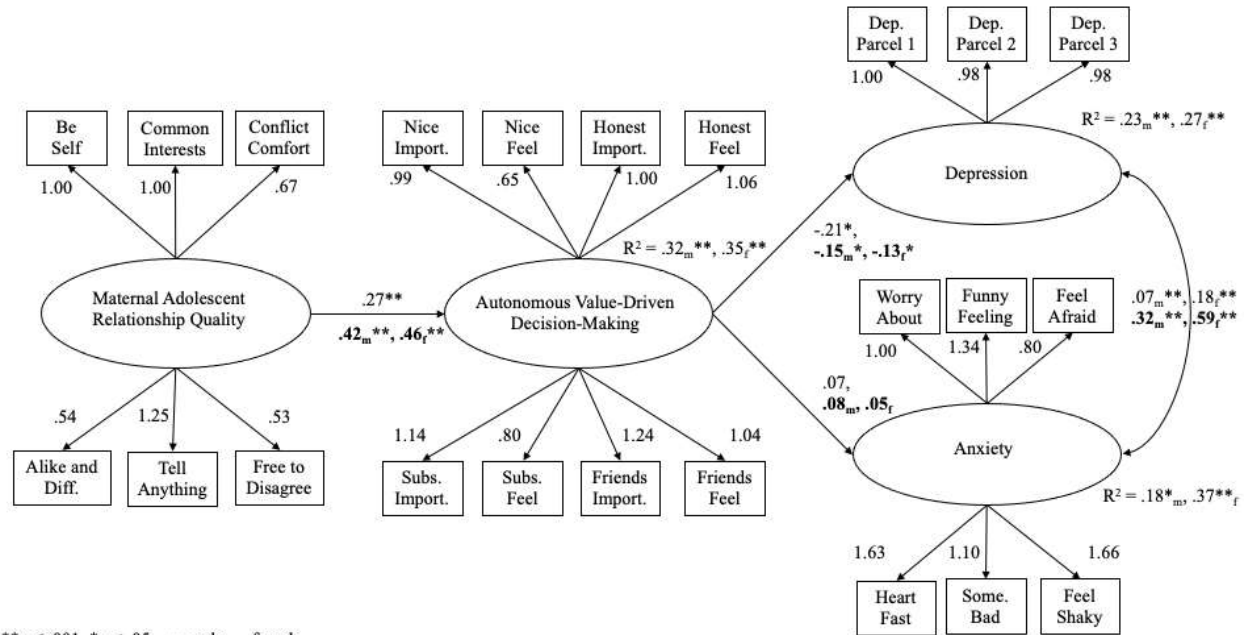


**Figure 5 Unconstrained Multiple Group CFA**



Tests of Model Fit:  $\chi^2(423) = 775.92, p < .001$ ; RMSEA = .056, 90% CI .05 to .062; CFI = .91; and SRMR = .07  
 Bolded values = female group, standard font = male group.

**Figure 6 Full Structural Model**



**\*\*** $p \leq .001$ , **\*** $p < .05$ ,  $_m$  = male,  $_f$  = female

Tests of Model Fit:  $\chi^2 (666) = 1069.56$ ,  $p < .001$ ; RMSEA = .049, 90% CI is .043 to .054; CFI = .91; and SRMR = .07