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The Division of Diabetes Responsibility Between Latinx and Non-Hispanic White
Adolescents and Their Parents: Relations with Adolescent Health

A Thesis submitted in partial satisfaction of the requirements for the degree of
Master of Arts

in

Psychological Sciences

by

Abigail Bolter

Committee in charge:

Professor Alexandra Main, Chair
Professor Deborah Wiebe
Professor Jennifer Hahn-Holbrook

2020

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2020

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Abstract

The Division of Diabetes Responsibility Between Latinx and Non-Hispanic White Adolescents and Their Parents: Relations with Adolescent Health

by Abigail Bolter for the partial satisfaction of the requirements for the degree of Master of Arts in Psychological Sciences University of California, Merced 2020
Dr. Alexandra Main, Chair

Adolescence is a pivotal time for Latinx individuals with type 1 diabetes, yet this population remains understudied. This paper examined the role that division of responsibility (adolescent, parent, and shared) for diabetes management tasks plays in adolescent health in this population across two studies. Diabetes responsibility was measured using two methods: surveys (Study 1) and a novel coding scheme applied to parent-adolescent interactions (Study 2). Results of study 1 showed that Latinx mothers reported more shared and less adolescent responsibility in surveys than non-Hispanic White mothers. Mother- and adolescent-reported shared responsibility were generally associated with higher levels of diabetes adherence, while reports of individual (parent and adolescent) responsibility were generally associated with lower levels of diabetes adherence. Results of Study 2 showed that descriptions of shared, adolescent, and parent responsibility in conflict discussions were not associated with adolescent health. Cultural values (familism and independence/self-reliance) were not associated with particular patterns of diabetes responsibility, but cultural values were associated with health outcomes. Specifically, independence/self-reliance tended to be associated with poorer adolescent health (lower quality of life and increased anxiety), while adolescent familism was associated with higher levels of adolescent-reported adherence. The importance of multi-method studies and implications for interventions are discussed.

General Introduction

Between 2002 and 2009, diagnoses of type 1 diabetes in Latinx youth in the United States increased by 4.2% each year, which was significantly higher than the 1.2% annual increases seen in non-Hispanic White (NHW) youths (Mayer-Davis et al., 2017). Adolescence is a pivotal time for individuals with type 1 diabetes because adolescent health typically begins to decline during this period (Wiebe et al., 2016). Despite the prevalence of diabetes in this Latinx youth, research specifically focusing on the management of diabetes in this population is limited. Studying Latinx families is important because it is unclear to what extent findings NHW families generalize to Latinx families.

Successful diabetes management during adolescence requires collaboration between family members (Hegelson et al., 2008; Wiebe et al., 2016; Young et al., 2014). However, few studies have examined how family processes are related to adolescent health in Latinx adolescents. Main et al. (2014) compared Latinx to NHW families and found that associations between diabetes conflicts and adherence were moderated by ethnicity, such that only NHW families showed the expected pattern that diabetes-related conflicts were associated with adherence. These results demonstrate that family processes may operate differently for Latinx families compared to NHW families. Therefore, it is important to investigate factors that are associated with adolescent health in this population.

To address this gap in the literature, this paper will focus on how parent-adolescent dyads divide diabetes responsibility across two studies. Study 1 compares Latinx and NHW parent-adolescent dyads to understand the similarities and differences between the two groups. Study 2 focuses specifically on Latinx families in order to understand the role that cultural values play in adolescent health for Latinx families.

Study 1: The Role of Shared Versus Individual Diabetes Responsibility for Adolescent Health in Latinx and Non-Hispanic White Adolescents

In a review about diabetes management in the context of interpersonal relationships, Wiebe et al. (2016) concluded that collaboration with family members during adolescence is associated with better diabetes management. However, this review also points out that some studies failed to find an association between parental involvement and health outcomes. When reviewing the literature on parental involvement in diabetes management, Young et al. (2014) recommended that parents collaborate with their children rather than taking over or becoming uninvolved, and that they should focus on scaffolding the child's self-management in order to maintain the child's self-efficacy. A review of interventions to improve health outcomes for children and adolescents with type 1 diabetes found that programs that focused on family collaboration led to lowered blood glucose and decreased hospitalizations (Hillard et al., 2016). However, most of these studies were conducted with NHW samples. Thus, it remains unclear if shared responsibility is associated with better health outcomes in Latinx youths.

Most of the studies reviewed by Wiebe et al. (2016) operationalize diabetes responsibility as a continuum from adolescent responsibility to parent responsibility, rather than considering parent responsibility, adolescent responsibility, and shared responsibility as separate categories. This means that in most studies, a family in which the adolescent performs half of diabetes management tasks independently and the parent performs the other half independently would be coded the same as a family in which the parent and the adolescent perform all tasks together. Hegelson et al. (2008) argue that measuring responsibility in this way as a continuum from parent responsibility to adolescent responsibility may not be appropriate because shared responsibility may be qualitatively different than individual responsibility. In Hegelson et al. (2008), when responsibility for diabetes management tasks was measured by comparing self-reports of parent responsibility, adolescent responsibility, and shared responsibility for diabetes management tasks, both adolescent and parent reports of shared responsibility were associated with more adolescent adherence to diabetes regimens, while parent and adolescent report of parent responsibility were associated with less adolescent adherence. Conversely, adolescent responsibility was unrelated to adherence. In addition, adolescent reports of shared responsibility were associated with lower HbA1c in older adolescents, but not younger adolescents (Hegelson et al., 2008).

Responsibility for diabetes management tasks is also important for adolescent mental health. In the same study, shared responsibility was associated with lower psychological distress, whereas individual responsibility was associated with greater psychological distress (Hegelson et al., 2008). Specifically, adolescent-reported shared responsibility was associated with fewer adolescent depressive symptoms, while individual responsibility was unrelated to depressive symptoms. Furthermore, adolescent-reported shared responsibility was associated with less anger, while adolescent-reported adolescent responsibility was associated with greater anger. However, responsibility was not associated with anxiety.

The aforementioned findings regarding shared responsibility in NHW adolescents with diabetes mirror the literature on romantic couples coping with a chronic illness. Specifically, adults who report that their spouse collaborates rather than controls them or remain uninvolved in their illness tend to have better mental health outcomes, just as

shared responsibility for diabetes management was linked with fewer depressive symptoms in adolescents (Berg & Upchurch, 2007; Hegelson et al., 2008). Collaboration from spouses has also been linked to physical health outcomes. One study of married couples where one partner had heart failure found the use of “we” language rather than “I” or “you” language by the healthy spouse positively predicted the patient's health outcomes (Rohrbaugh, 2008).

The literature on diabetes responsibility in Latinx families is limited. One study examined the relationships between adolescent responsibility and adolescent health in Latinx families and found that adolescent responsibility was related to worse adherence, but was unrelated to HbA1c after controlling for age, parental education, parental marital status, linguistic acculturation, and generation status (Hsin et al., 2009). However, no studies to the author's knowledge have examined the role of shared or parent responsibility in Latinx adolescents' diabetes management. In addition, no studies to the author's knowledge have compared different types of responsibility in Latinx versus NHW families. It is important to understand diabetes responsibility in Latinx families because it is possible that Latinx dyads will report different patterns of responsibility compared with NHW dyads. Indeed, Latinx children have been shown to collaborate with their siblings more often than NHW children, suggesting that Latinx parents and adolescents may collaborate more than NHW dyads (Alcalá et al., 2018).

Study 1 will examine the relationship between mother and adolescent reports of adolescent, mother, and shared responsibility and type 1 diabetes management in a sample of NHW and Latinx mother-adolescent dyads. Study 1 has three central aims. The first aim is to compare how Latinx versus NHW families with an adolescent with type 1 diabetes divide diabetes-related responsibilities. I hypothesize that Latinx families will share responsibility for diabetes-related tasks more often and will report individual responsibility less often than NHW families. The second aim is to replicate previous findings from predominately NHW families that shared responsibility is linked to higher diabetes adherence, lower (better) HbA1c, and lower depressive symptoms than individual (mother or adolescent) responsibility in Latinx families. I hypothesize that shared responsibility will be linked with higher adherence, lower HbA1c, and lower depressive symptoms, whereas mother and adolescent responsibility will be associated with lower adherence, higher HbA1c, and higher depressive symptoms. The third aim is to test if ethnicity moderates the relationship between the division of diabetes responsibility and adolescent health. I do not have a specific hypothesis about the role of ethnicity in this relationship. The relationship between diabetes responsibility and adolescent health may be stronger in Latinx families due to increased collaboration in this population (Alcalá et al., 2018). However, Main et al. (2014) found that associations between conflict and diabetes adherence were significant for NHW but not Latinx families, so associations between responsibility and adolescent health may be weaker in the Latinx participants.

Method

Participants

Study 1 is part of a larger investigation about type 1 diabetes management in Latinx and NHW adolescents and their mothers. Participants were 118 Latinx and NHW mother-adolescent dyads (56= Latinx) recruited from an endocrinology clinic in the Southwest United States. 247 qualifying families were approached to be in the study. 183 expressed interest, and 118 of those participated. The most common reason for not participating was scheduling difficulties (40%) followed by being too busy (33%), and distance/transportation issues (27%). There were no differences in adolescent ethnicity, age, sex, pump status, or HbA1c between those who participated versus those who did not. Adolescents were eligible to participate if they were between 10 to 15 years of age, had a diagnosis of type 1 diabetes for at least one year, and both mothers and adolescents were able to speak English or Spanish. The Latinx participants were 12% first generation (mother and adolescent born outside the US), 57% second generation (mother born outside US, adolescent inside US), and 31% third generation (both born in the US). 84% of mothers born outside the US were born in Mexico. Descriptive statistics about the full sample are presented in Table 1.

Procedure

Research assistants reviewed a consent document with mothers and an assent document with adolescents. Mothers also signed a form releasing information from the adolescent's medical records including but not limited to the amount of time the child had been diagnosed with diabetes and their HbA1c.

After informed consent was obtained, participants were trained by a research assistant to use the electronic survey platform. The research assistant also asked demographic questions and entered the answers for participants. After mothers and adolescents were trained to use the survey platform, the research assistant took the adolescent into a separate room to be interviewed while the mother used the computer to take surveys. After completing the study, mothers and adolescents were asked if they had any questions about the study and were compensated with a \$40 gift card.

Measures

Covariates. The following demographic and illness variables were controlled for in the present study: whether the adolescent was on an insulin pump, years since diagnosis, adolescent sex, adolescent age, and socioeconomic status (SES). SES was calculated by standardizing maternal education and median household income and calculating the mean of these two values.

Diabetes Responsibility. Diabetes responsibility was assessed with mother and adolescent report using a modified version of the Diabetes Family Responsibility Questionnaire (DFRQ; Anderson et al., 1990). Respondents indicated on a five-point scale (*child alone; mostly child; equally; mostly parent; parent alone*) who was responsible for 23 diabetes management tasks. Sample tasks include "Taking more or less insulin according to the results of a blood sugar or urine test" and "Remembering the day of clinic appointment". Responses of "I Alone/My Child Alone" and "Mostly Myself/Mostly Child" were coded as "adolescent responsibility", responses of "Equally" were coded as shared responsibility, and responses of "Mostly My Parent/Mostly Myself" and "Parent Alone/I Alone" were coded as "parent responsibility." The proportion of each type of responsibility was calculated for mother and adolescent reports.

Adherence. Mother and adolescent reports of diabetes adherence were measured using a modified version of the Self-Care Inventory (SCI; Lewin et al., 2009). The SCI assesses how well adolescents adhere to recommended diabetes management tasks such as checking blood glucose and administering insulin. All questions are reported on a 5-point scale ranging from 1 = *'never did this'* to 5 = *'always do this as recommended without fail'*. Items from the original scale were rephrased to be relevant to adolescents on an insulin pump or using injections, and two items were added to the scale to assess how well participants count carbohydrates and calculate insulin based on carbohydrates. Scores with and without these items were highly correlated in the full sample including both the Latinx and NHW participants ($r = .99, p < .001$). These items were added to reflect current treatment practices (see Main et al., 2014). The scale was translated into Spanish and back translated into English to create the Spanish version of the measure.

HbA1c. HbA1c was obtained from adolescents' medical records. HbA1c is a measurement of blood glucose in the past three to four months, and higher values indicate poorer glycemic control.

Depressive Symptoms. Depressive symptoms were measured using the Children's Depressive Inventory (CDI; Kovacs, 1985). Adolescents are asked to indicate to what extent they experienced symptoms of depression in a 27-item scale. Sample items include: "1 = I am sad once in a while, 2 = I am sad many times, 3 = I am sad all the time" and "1 = I have fun in many things, 2 = I have fun in some things, 3 = Nothing is fun at all." A shortened version of this measure was also used in Hegelson et al. (2008), and that study found an association between shared responsibility and lower scores on the CDI in a primarily NHW sample.

Analysis Plan

First, *t*-tests were conducted to assess differences between reports of adolescent, parent, and shared responsibility across Latinx and NHW families. Second, zero-order correlations were conducted between all responsibility variables and health outcomes. Finally, hierarchical regressions were conducted to test for associations between diabetes responsibility and adolescent health while controlling for key demographic variables. The dependent variables in all regression models were adolescent-reported adherence, mother-reported adherence, HbA1c, and depressive symptoms. Separate regressions were conducted for adolescent, parent, and shared responsibility, resulting in a total of 12 analyses.

We followed the steps outlined in Helgeson et al. (2008) to conduct the regression analyses. The first step of these regressions consisted of the following demographic variables: sex, age, insulin pump status, SES, years since diagnosis, and ethnicity. The second step consisted of the mother and adolescent reports of diabetes responsibility (mother, adolescent, and shared). Parent and adolescent reports were added in the same regressions in order to minimize the total number of statistical tests, and to allow for comparisons of the change in R^2 from both the parent and adolescent reports of responsibility combined. Exploratory analyses were conducted with only a single reporter in each model, and the findings were unchanged. In addition, parent and adolescent reports were moderately correlated (.26-.44), so correlations between reporters did not introduce collinearity concerns. Thus, results with both reporters in the same model are presented for the sake of parsimony. The third step tested for an interaction between ethnicity and diabetes responsibility to determine whether associations varied across

ethnicity. Mother and adolescent reports of diabetes responsibility were centered and multiplied to create an interaction term for each model (see Table 4).

Results

Ethnicity and the Division of Diabetes Responsibility

Results of *t*-tests comparing all variables between Latinx and NHW participants are displayed in Table 1. Latinx mothers reported their adolescents were less responsible for diabetes management tasks compared with NHW mothers $t(115) = -4.02, p < .001, d = .76$. Consistent with hypotheses, Latinx mothers reported more shared responsibility compared with NHW mothers $t(115) = 2.24, p = .03, d = .41$. There were no other statistically significant differences between Latinx and NHW participants for diabetes responsibility. Figures 1 and 2 display graphs of parent and adolescent reports of responsibility by ethnicity.

Correlations Among Study Variables

Correlations among study variables are displayed in Table 2, and correlations broken down by ethnicity are displayed in Table 3. There were multiple associations between shared responsibility and adolescent health. Specifically, when mothers reported more shared responsibility, mothers and adolescents both reported higher adherence. When adolescents reported more shared responsibility, mothers reported higher adherence. Finally, there was an association between adolescent reports of shared responsibility and lower HbA1c, but this association was only statistically significant for the Latinx participants.

Individual responsibility (parent and adolescent) was associated with lower adherence and higher HbA1c across some measures. Specifically, when adolescents reported more responsibility for diabetes management tasks, adolescents and mothers reported lower adherence. Additionally, when Latinx adolescents reported more responsibility for diabetes management tasks, they had higher HbA1c. When Latinx mothers reported more responsibility, they also reported lower adolescent adherence.

Hierarchical Regressions: Associations Between Division of Responsibility and Adolescent Health Controlling for Demographic Variables and Interactions with Ethnicity

Results of hierarchical regressions are displayed in Table 4. The association between mother reports of shared responsibility and mother-reported adherence for the sample as a whole remained statistically significant in the models after controlling for demographic variables and adolescent-reported shared responsibility. In addition, there was an association between mother-reported mother responsibility and lower adherence after controlling for demographic variables and adolescent-reported mother responsibility in. No other main effects were significant in the hierarchical models.

There was one interaction between ethnicity and responsibility predicting adolescent health such that Latinx mothers reported lower adolescent adherence when they reported lower shared responsibility, and higher adherence when they reported higher shared responsibility while NHW mothers did not report differing levels of adherence depending on the level of shared responsibility (see Figure 3). No other interactions between ethnicity and responsibility predicting health variables were significant.

In addition to these planned analyses, I explored interactions between age and diabetes responsibility predicting adolescent health. Though not one of the main hypotheses of the study, I conducted these exploratory analyses because prior literature has found diabetes responsibility to interact with adolescent age in predicting diabetes

management (Helgeson et al., 2008). None of the interactions with adolescent age were significant.

Discussion

Previous research has shown that shared responsibility for diabetes management between parents and adolescents is associated with higher treatment adherence, lower HbA1c, and higher self-efficacy in predominately NHW families (Hegelson et al., 2008). The present study was the first to compare the role of shared versus individual diabetes responsibility plays in adolescent health between Latinx and NHW adolescents and their mothers. Results of this study showed that shared responsibility tended to be associated with higher rates of adherence and lower HbA1c in Latinx families and revealed some differences in the division of responsibility in Latinx versus NHW families. Specifically, Latinx mothers reported more shared and less adolescent responsibility for diabetes management than NHW mothers, and the association between mother reported shared responsibility and mother reported adherence was stronger in Latinx families compared with NHW families. I discuss the findings in more detail below.

Comparisons of Diabetes Responsibility Between Latinx and NHW Families

Some differences between Latinx and NHW families emerged in this investigation. Specifically, Latinx mothers reported more shared and less adolescent responsibility than NHW mothers. This finding is consistent with research showing that Mexican immigrant sibling dyads collaborate more when performing a planning task than European-American dyads, indicating that collaboration may be more common in the family context in Latinx families (Alcalá et al., 2018). In addition, a case study of adults teaching children a novel task found that European American adults tended to direct the child's attention more overtly, while Latinx adults tended to allow children autonomy to disengage and reengage with the task at their own (Paradise et al., 2014). In the context of diabetes management, NHW mothers may direct adolescents to take more responsibility than Latinx mothers, as Latinx mothers may allow adolescents to engage with diabetes management tasks at their own pace.

Cultural values may also play a role in the division of diabetes responsibility. Latinx families may be more likely to share responsibility than NHW families due to the cultural value of familism (see Knight et al., 2010). Conversely, NHW families may be more likely to practice adolescent responsibility for diabetes management tasks due to the value of independence/self-reliance, which is more prevalent in European American culture (see Knight et al., 2010). Future investigations could measure cultural values directly in order to understand the role those values play in diabetes management in a family context.

Latinx mothers reported more shared responsibility and less individual responsibility than NHW mothers, but there were no differences for adolescent reports. Thus, it is not possible to know for sure if Latinx families truly share more diabetes responsibility and have less adolescent responsibility than NHW families or if Latinx mothers simply respond to survey measures differently than NHW mothers. If Latinx families do share responsibility more than NHW families, it is also not yet clear if Latinx families are more likely to share responsibility for all tasks than NHW families, or if Latinx families share responsibility for particular tasks that NHW families tend to assign individual responsibility for. Future investigations can explore the ethnic differences in specific items on the DFRQ to better understand the nuances of differences between how Latinx and NHW families divide diabetes responsibility.

Shared Responsibility and Adolescent Health

Consistent with hypotheses, greater shared responsibility tended to be associated with better adolescent health across both Latinx and NHW families. Specifically, mother and adolescent reports of shared responsibility were associated with higher mother-reported adherence, while mother reports of shared responsibility were associated with higher adolescent-reported adherence. The association between mother reports of shared responsibility and mother reports of adherence remained significant after controlling for demographic variables, and the association between mother reported shared responsibility and adolescent reported adherence was marginally significant after controlling for demographic variables. This finding is consistent with findings from Hegelson et al. (2008) in a predominantly NHW sample, who found that shared responsibility tended to be associated with higher adherence, lower HbA1c, and lower psychological distress, while individual responsibility tended to be associated with lower adherence and higher psychological distress. Importantly, the current study extends these findings to Latinx adolescents whose rates of type 1 diabetes are increasing (Mayer-Davis et al., 2017).

In the Latinx families only, adolescent-reported shared responsibility was associated with lower HbA1c, but there were no significant associations between shared responsibility and HbA1c after controlling for demographic and illness-related variables. However, there was a significant interaction between ethnicity and shared responsibility predicting mother-reported adherence. Specifically, the positive association between mother-reported shared responsibility and mother-reported adherence was stronger for Latinx families than NHW families. This finding shows that not only does the relationship between shared responsibility and adolescent health replicate in Latinx families, but the relationship may actually be stronger in this population. This finding may be explained by an increased emphasis on familism and collaboration in this population (Alcalá et al., 2018; Knight et al., 2010).

The finding that shared responsibility may be especially beneficial in Latinx families is particularly interesting when considered in the context of other findings comparing Latinx and NHW adolescents with type 1 diabetes. Using the same dataset as the current study, Main et al. (2014) found that associations between conflict and diabetes adherence were only significant for NHW families and not Latinx families. Taken together, the results of the present study and Main et al. (2014) highlight that the relationship between family processes and diabetes management can function differently in Latinx versus NHW families. In particular, it may be that Latinx families cooperate more when managing diabetes, and conflict is qualitatively different in those families who cooperate more. Future investigations can explore the relationship between conflict and shared responsibility in this population.

Individual Responsibility and Adolescent Health

Also consistent with hypotheses, while shared responsibility tended to be associated with higher adherence, individual responsibility (both parent and adolescent responsibility) tended to be associated with lower adherence. Adolescent reports of adolescent responsibility for diabetes management tasks were correlated with lower mother- and adolescent-reported adherence. However, these associations were no longer significant after controlling for demographic variables. In the Latinx families, adolescent reports of adolescent responsibility were associated with higher HbA1c, but there were no significant associations between adolescent responsibility and HbA1c after controlling for demographic variables.

For parent responsibility, there was a correlation between mother reports of parent responsibility and worse mother-reported adherence in the Latinx families but not in the NHW families before any variables were controlled for. This finding is similar to the findings for shared responsibility in that associations between shared responsibility and adolescent health were often stronger in Latinx families or were only significant in that population. In the full sample, there was a significant association between mother-reported parent responsibility and lower mother-reported adherence after controlling for demographic variables. These results mirror previous studies finding that individual responsibility was associated with worse adolescent health (Helgeson et al., 2008), and that Latinx adolescents who take more responsibility for diabetes management had worse diabetes adherence (Hsin et al., 2009).

Taken together, findings from previous research and the current investigation indicate that it may be more appropriate to consider mother, adolescent, and shared responsibility as qualitatively different ways of dividing diabetes responsibility rather than conceptualizing diabetes responsibility as a continuum from parent responsibility to adolescent responsibility. The current study suggests that this conceptualization may be particularly important in Latinx families coping with chronic illness, as associations between particular patterns of responsibility and adolescent health were often stronger in that population.

Limitations and Future Directions

Though this study has numerous strengths, such as comparing across two ethnicities and incorporating multiple reporters, there are some limitations that warrant discussion. First, it is important to note that mothers and adolescents did not always agree on the distribution of diabetes-related tasks. Reports of shared responsibility in particular were discrepant, with only a .26 correlation between mother and adolescent reports. When correlations were broken down by ethnicity, Latinx families had a greater level of agreement than NHW families regarding shared responsibility (.32 versus .12 respectively). By contrast, NHW families had higher levels of agreement about adolescent responsibility than Latinx families (.54 versus .32 respectively), and reports of parent responsibility were comparable across the two groups. These discrepancies in inter-reporter agreement across ethnicity warrant further investigation. If Latinx families systematically agree more about shared responsibility, reports of shared responsibility using the DFRQ may be more accurate in this population compared to Non-Hispanic Whites. In addition, some associations between responsibility and adolescent health only existed when examining mother or adolescent reports, and it is unclear whose reports are more accurate.

To address discrepancies between reporters, future investigations could focus on developing alternative methods to assess the division of diabetes responsibility that incorporate both parent and adolescent reports in a single measure. One way to achieve this could be to code parent adolescent interactions in real time for instances where they mention diabetes management tasks, so that both the parent and adolescent perspective are accounted for in one measure. The discrepancies between parent and adolescent reports could also be a worthwhile topic of investigation in its own right. Anderson et al. (2009) found that agreement about who is responsible for diabetes management tasks is associated with better HbA1c, although disagreement was unrelated to HbA1c. Studies

can explore parent-adolescent agreement about diabetes management tasks in Latinx families to test if these same relationships appear in this population.

It was not possible to determine causality with the current methods. Helgeson et al. (2008) found shared responsibility to be associated with higher rates of adherence utilizing a longitudinal design, so it appears that a rise in shared responsibility precedes a rise in adherence. However, longitudinal and experimental research is needed that assesses the relationship between diabetes responsibility and adolescent health in Latinx families to determine if responsibility causes changes in adolescent health outcomes. In addition, it is possible that the relationship between adherence and shared responsibility is bidirectional: when adherence is higher, parents may share responsibility with adolescents rather than taking responsibility themselves, because parents trust adolescents to complete management tasks more when adherence is higher.

A final limitation of this study was that only mothers completed the DFRQ. Although mothers have been shown to be more responsible for their child's chronic illness management than fathers, fathers may play a unique role in diabetes management (Quittner et al., 1998). Using this dataset, Main et al., (2014) found that Latinx adolescents reported more conflicts with their mothers than NHW adolescents, but adolescents did not report differing levels of conflict with fathers depending on ethnicity, so relationship quality may function differently in fathers versus mothers. Future investigations can test if the associations between shared responsibility and adolescent health observed in this study extend to father-adolescent relationships.

Conclusions and Implications

This investigation found that shared responsibility tended to be associated with higher treatment adherence, while individual responsibility tended to be associated with lower treatment adherence in both Latinx and NHW families. Ethnicity moderated the relationship between mother-reported shared responsibility and mother-reported adherence such that the association between shared responsibility and better adherence was stronger in Latinx families. Furthermore, there was a correlation between adolescent responsibility and higher HbA1c and shared responsibility and lower HbA1c in the Latinx participants only before any variables were controlled for. Latinx mothers reported different patterns of diabetes responsibility than NHW mothers. Latinx mothers tended to report more shared and less adolescent responsibility for management tasks. These results demonstrate that not only is shared responsibility important for adolescent health in Latinx families, but also that a) these families often report more shared responsibility than NHW families and b) the association between shared responsibility and health can be stronger in Latinx families compared with NHW families. Future investigations should continue to explore how family dynamics in Latinx families relate to adolescent health with an emphasis on the similarities and differences between Latinx and NHW families.

These results also have implications for interventions. Interventions encouraging collaboration between parents and adolescents for diabetes management have been successful, but these interventions have been conducted primarily with NHW families (Hillard et al., 2017). Future interventions encouraging collaboration should be tested with Latinx families and should be designed with their cultural values in mind. Given that this study found that associations between shared responsibility and diabetes adherence tended to be stronger for Latinx adolescents than NHW adolescents, interventions for this population may be particularly effective.

Study 2: Parent Adolescent Discussions of Diabetes Responsibility and the Role of Cultural Values in Diabetes Responsibility

In the diabetes literature, responsibility for diabetes management within families is typically assessed using surveys such as the Diabetes Family Responsibility Questionnaire (DFRQ). This questionnaire asks respondents to indicate who is responsible for a particular diabetes management task: the parent, the child, or both (Anderson et al. 1990). One strength of this measure is that it asks about a variety of management tasks, so scores reflect diabetes management across multiple domains including making appointments, giving insulin, and communicating about diabetes to others. This measure is also validated in both adults and adolescents, so it is possible to compare across reporters.

Although the DFRQ has multiple strengths, this method has at least three limitations. First, survey/self-report measures may introduce response bias. Second, parent and child reports of the same construct may differ (Anderson et al., 2009). This is problematic because when discrepancies emerge, it is unclear whose report more accurately reflects division of diabetes-related tasks in the family. Finally, the DFRQ does not distinguish between tasks sometimes completed independently by the parent and sometimes completed independently by the adolescent versus tasks completed collaboratively. Hegelson et al. (2008) pointed out that if parents and adolescents are completing tasks together, parents may be modeling good self-care behaviors to their adolescents. However, if shared responsibility reported on DFRQ involves alternating responsibility between parents and adolescents for the same task, shared responsibility may be associated with better self-care simply because more individuals are making sure the task is completed (Hegelson et al., 2008).

Observational methods, such as a family discussion task, may address the aforementioned limitations of the DFRQ. Parent-adolescent conversation tasks vary across studies, but typically dyads are given a prompt related to a topic they have frequently argued about or is upsetting to them in the past month and are observed discussing the prompt without researchers present (for an example of this paradigm in a population with type 1 diabetes, see Jaser and Grey, 2010). Researchers could use these discussions to assess diabetes responsibility by coding for statements made during the conversation about who is responsible for diabetes management tasks.

There are several benefits to using a naturalistic discussion to assess diabetes responsibility that decrease response bias associated with surveys. First, participants are unaware of what researchers are measuring. Second, participants may be less likely to overreport their own diabetes responsibility, because the other person who may claim responsibility is present during the discussion. However, this procedure has not been used to assess diabetes responsibility to the author's knowledge. Third, a discussion paradigm allows researchers to measure parent and adolescent perceptions about responsibility at the same time, because researchers can code statements by both members of a dyad during the conversation. This single measure of diabetes responsibility is helpful, because parent and adolescent reports are often discrepant (see Study 1). Although disagreements about who is responsible may emerge during a discussion task, because both parents and adolescents are able to articulate their perspectives about responsibility at the same time, both perspectives will be accounted for in the calculation of responsibility. For example, if a parent believes they were responsible for a task and an adolescent believes they were

responsible, both statements will be coded and added to the single measure of diabetes responsibility. Finally, a conflict discussion paradigm can disambiguate which tasks are truly a collaborative effort versus tasks where responsibility alternates between the parent and adolescent. Tasks described by participants using “we” language can be considered indicative of a cooperative effort to complete the task, rather than alternating. Such observed discussions have not been used to assess diabetes responsibility to my knowledge, but Rohrbaugh (2008) used a similar method of interviewing spouses about one partner’s heart failure and found that “we” language by the healthy spouse was associated with better health for the patient.

Study 1 found that Latinx mothers report more shared and less adolescent responsibility than NHW mothers. However, it is unclear why this relationship emerged. Study 2 seeks to address this limitation by examining the role that cultural values play in diabetes responsibility. For example, familism has been identified as a Mexican American cultural value characterized by caregiving, maintaining close relationships between family members, and relying on the community to define oneself, and this value may drive collaboration on diabetes management tasks (Knight et al., 2010). Although familism has not been explored in the context of diabetes to the author’s knowledge, familism has been linked with better psychological health, and family support more broadly has been linked to increased medication adherence in Latinx individuals with schizophrenia (Campos et al., 2014; Ramírez García et al., 2006). Independence/self-reliance, characterized by self-sufficiency, has been identified as a European American cultural value more common among NHW than Hispanic individuals (Knight et al., 2010). Independence/self-reliance may be important in the context of diabetes management because families who value independence/self-reliance may be more likely to emphasize individual responsibility for diabetes management over shared responsibility.

In Study 2, I aim to extend my research on diabetes responsibility and adolescent health in three key ways: First, Study 2 will develop a novel method to assess the division of diabetes responsibility, and will test if there are associations between division of diabetes responsibility and adolescent health using this method. Second, Study 2 will explore the role that the cultural values of familism and independence/self-reliance play in diabetes management and the division of diabetes responsibility in Latinx families. Third, in order to assess within-group variation in associations between cultural values and diabetes management, Study 2 will only include Latinx families. Some scholars have called for an increased research focus on within culture variation, normative development within the ethnic group, and cultural values in developmental research with Latinx youth, which can be achieved in part by conducting research with participants from a single ethnic group (see Raffaelli et al., 2005).

Methods

Participants

Participants were part of a larger study about family communication in the context of type 1 diabetes management. To be eligible, adolescents were required to speak English or Spanish, be between the ages of 10 and 15 years, have had a diagnosis of type 1 diabetes for at least one year, and not have any major intellectual impairment that would prevent them from being able to complete study procedures. The participating parent was the parent most involved in the adolescent's diabetes care and was required to speak English or Spanish. Parents were excluded if they lived with adolescents for less than 50% of the time. 511 qualifying families were invited to participate: 187 from the San Joaquin Valley, California and 327 from Los Angeles, California. 84 (16%) were enrolled in the study, 160 (31%) refused outright, and 133 (26%) expressed a desire to participate but could not be reached to schedule an appointment. Reasons for refusal included transportation concerns, being too busy, and scheduling conflicts. Of the 84 families who completed the larger study, 55 participated in the conflict discussion and self-identified as Latinx. Of mothers who reported their country of origin, 47% were born in the United States. Of those born outside the United States, 75% were born in Mexico. Participants from Los Angeles used an insulin pump significantly more often than participants from the San Joaquin Valley ($\chi^2 = (1, N = 53) = 7.05, p = .008$). Participants did not differ significantly on SES, generation status, time since diagnosis, division of diabetes responsibility, HbA1c, adherence, or health-related quality of life across the two sites. Descriptive statistics of study variables are displayed in Table 5.

Procedure

The study was approved by the appropriate Institutional Review Boards. Parents provided informed consent and adolescents provided assent. All study procedures were completed in the language in which the parent and adolescent felt most comfortable. Spanish versions of measures were created by translating and back translating English measures by bilingual research assistants. 49% of parents and 98% of adolescents completed surveys in English. Parents were compensated for participation with \$20 cash while adolescents were compensated with a \$20 gift card.

For the conflict discussion, parents and adolescents identified a topic related to diabetes management they frequently argued about using the Diabetes Family Conflict Scale (Hood, et al., 2007). Participants were given the following instructions for 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 then seated side by side to discuss the topic for ten minutes. The discussions took place in a private room when possible. A card with the following three questions was placed with the participants during the conflict discussion to keep them on topic "(1) What is the topic? (2) How does it make each of you feel? Why? (3) What might be a good solution?" After ten minutes, the research assistant knocked on the door to end the discussion. All videos were transcribed by undergraduate research assistants

under the supervision of graduate students. Spanish language videos were transcribed in Spanish and translations were checked by a second Spanish speaker. Approximately half (49%) of the conversations were in Spanish.

Measures

Diabetes Responsibility. Discussion transcripts were coded for statements in which either the parent or adolescent described a diabetes management task or otherwise indicated who is responsible for diabetes management. Each video was coded in two passes. First, coders determined if each statement in the transcript was codable. For a statement to be codable, it needed to reference an action performed the parent, adolescent, or both that was intended to manage diabetes and was under the actor's control. For example, if an adolescent said, "I do it [prick my finger] in the mornings," that statement was coded for adolescent responsibility. However, if an adolescent said "I kinda like the pump," it was not considered codable, because although it referenced diabetes management, the statement did not describe a diabetes management task under the actor's control. Statements about forgetting to complete a task or not completing a task such as, "you're not testing," were considered codable. These statements were included because when one party blamed the other for forgetting or admitted they themselves forgot to complete a task, they implicitly implied that that task was the responsibility of the person who forgot. General statements about diabetes management that did not reference a specific task such as "You really do a good job in managing your diabetes," were also considered codable, because such statements indicated who is viewed as responsible for diabetes management in the dyad. Statements referencing diabetes management by a third party other than the parent or adolescent, such as a second parent or grandparent, were not considered codable.

During the second pass, statements that were considered codable were coded for (1) who performed the management task (parent, adolescent, or both), and (2) if the statement was about an event had already happened or was about a hypothetical action. Hypothetical actions included commands or suggestions such as, "You need to know how to count all those carbohydrates and know the labels," or they could be descriptions of actions that could take place in the future such as, "I guess we could talk about lunch for school." Statements about forgetting to complete a task or not completing a task one was responsible for were not considered hypothetical, because the action of forgetting had actually occurred and effected the child's diabetes management. All actions coded as hypothetical were dropped from calculations of diabetes responsibility, because the measure was intended to capture who is seen as responsible for diabetes management at the time of the discussion rather than who should/could take responsibility in the future.

The author and an undergraduate research assistant completed the coding. The author conducted the coding and the undergraduate research assistant conducted reliability coding for 30% of transcripts, and a coding handbook was created for coders to reference with specific rules about which statements are codable and how they should be coded. The coding handbook can be viewed in the Appendix. Note that some codes included in the handbook were not used to calculate diabetes responsibility, and those codes are not discussed in detail here. Coders met weekly to discuss disagreements. Once a consensus was reached about a disagreement, the coding handbook was updated to reflect the consensus. For example, when coders disagreed about if a statement about the adolescent eating unhealthy food counted as diabetes management, they reached a consensus to only count references to food when the conversation mentioned the food being beneficial or detrimental to the adolescent's diabetes management. Coders reached

92% reliability for whether or not a statement was codable, 90% for who completed the task, and 89% for if a task was hypothetical.

The proportion of statements made during the conflict discussion referencing parent responsibility, adolescent responsibility, and shared responsibility were calculated. The following formula was used to calculate the score for shared responsibility: (number of parent and adolescent statements about shared diabetes management tasks) / (total number of parent and adolescent statements about diabetes management tasks) = (shared responsibility score). This process was repeated for parent and adolescent responsibility, yielding three scores of diabetes responsibility per dyad: one for parent responsibility, one for adolescent responsibility, and one for shared responsibility.

Cultural Values. Cultural values (independence/self-reliance and familism) were measured using the Mexican American Cultural Values Scale (MACVS). The measure includes nine subscales, six for traditional Mexican American cultural values and three for Mainstream American Values. The Independence/Self Reliance Subscale has items such as “as children get older their parents should allow them to make their own decisions” and “when there are problems in life, a person can only count on him/herself”. The MACVS includes three Familism subscales: Familism Support, Familism Obligations, and Familism Referent. This study combined the scores from these subscales to form an overall measure of familism. Example familism items include: “parents should teach their children that the family always comes first”, and “children should always do things to make their parents happy.” All items are measured on a Likert scale, with options of “*not at all, a little, somewhat, very much, and completely*” (Knight et al., 2010).

Adolescent Health. Adolescent diabetes adherence was measured using a modified version of The Self-Care Inventory (parent and adolescent reported) identical to the measure used in Study 1 (Lewin et al., 2009). Adolescent health-related quality of life was measured using the Pediatric Quality of Life Inventory. Respondents are asked to indicate on a Likert scale (*0 = never a problem; 1 = almost never a problem; 2 = sometimes a problem; 3 = often a problem; 4 = almost always a problem*) how often they have had a problem in the past month. Examples of problems measured on the scale include “I go ‘low,’” “It is hard for me to stick to my diabetes plan,” and “It is hard for me to tell doctors and nurses how I feel” (Varni et al., 2003). Information about the adolescent’s HbA1c, how long the adolescent had been diagnosed with diabetes at the time of the study, and if the adolescent used an insulin pump or gave injections were obtained from the adolescent’s medical record.

Depressive and anxiety symptoms were measured as indicators of psychological health. Depressive symptoms were measured using the Center for Epidemiologic Studies Depression Scale (CESD; Radloff, 1977). Adolescents were given 11 statements and were asked to select from the following options: “*Rarely or none of the time,*” “*Some or a little of the time,*” “*Occasionally or a moderate amount of time,*” or “*Most or all of the time.*” Sample statements include: “I felt sad” and “I felt lonely.” Anxiety was measured using the State-Trait Anxiety Inventory (STAI) (Spielberger, 1983). Adolescents were asked to indicate how they generally feel by indicating to what extent they agree with statements such as “I worry about making mistakes,” and “I worry too much.” The options consisted of “*Hardly ever,*” “*Sometimes,*” and “*Often.*”

Analysis Plan

Correlations were conducted between all cultural values, responsibility measures, and health outcomes. Hierarchical regressions were conducted to test for the relationship between diabetes responsibility and adolescent health while controlling for key demographic variables. The first step of these hierarchical regressions consisted of the following demographic variables, identical to those in Study 1: sex, age, insulin pump status, SES, and years since diagnosis. The second step consisted of scores for parent, adolescent, or shared responsibility. The dependent variables were adolescent reported adherence, parent reported adherence, HbA1c, quality of life, depression, and anxiety.

The first step of each regression consisted of the following demographic variables: sex, age, insulin pump status, SES, years since diagnosis, and generation status. The second step included parent and adolescent reports of cultural values (familism or independence/self-reliance). Parent and adolescent reports were added in the same regressions to allow us to understand the unique contributions of parent and adolescent cultural values to the overall variance in diabetes responsibility, as well as to compute the change in R^2 from the combined contributions of both reports. The dependent variables were adolescent responsibility, shared responsibility, and parent responsibility.

A final set of hierarchical regressions assessed the relationship between cultural values (familism and independence self-reliance) and adolescent health (diabetes adherence, health-related quality of life HbA1c, depression, and anxiety). These regressions were identical to the regressions examining the relationship between cultural values and diabetes responsibility, except that diabetes adherence, quality of life, HbA1c, depression, and anxiety were used as dependent variables instead of diabetes responsibility.

Results

The average scores for adolescent, shared and parent responsibility were 62%, 11%, and 28%, respectively.

Correlation analyses revealed that there were some associations between cultural values and adolescent health. Specifically, higher levels of parent and adolescent independence/self-reliance were associated with lower adolescent Health-Related Quality of Life, while parent independence/self-reliance were associated with higher levels of adolescent anxiety. Adolescent familism was correlated with higher parent-reported adherence (see Table 6). There were no other associations between cultural values and adolescent health.

The association between adolescent independence/self-reliance and Health-Related Quality of Life remained significant after controlling for demographic and illness variables ($\beta = -.31, p = .04$). None of the other significant associations between health variables and adolescent health remained significant after covariates were added.

There were no statistically significant correlations between diabetes responsibility and health (see Table 6). As a post-hoc analysis, I tested for interactions between age and diabetes responsibility predicting adolescent health, because Helgeson et al. (2008) found that shared responsibility predicted glycemic control for older but not younger adolescents with no main effect of shared responsibility on glycemic control. Interactions between each type of responsibility (adolescent, parent, and shared) and age predicting each indicator of adolescent health (adolescent-reported adherence, parent-reported adherence, quality of life, HbA1c, depression, and anxiety) were conducted, controlling for demographic and illness variables. This analysis yielded 18 total interactions. Only the interaction between age and adolescent responsibility predicting depression was significant ($\beta = 3.61, p = .02$). Since only one of the interactions was significant, I did not probe this interaction as it is likely spurious.

In addition, I conducted post-hoc analyses to determine if there was an interaction between cultural values and diabetes responsibility predicting adolescent health. In Study 1, there was an interaction between ethnicity and mother-reported responsibility predicting adherence, such that the slope was only significant for the Hispanic participants. Therefore, I hypothesized that relationships between diabetes responsibility and health would only be significant when parents or adolescents had high levels of familism, a Latinx cultural value, or low levels of independence/self-reliance, a European American cultural value. I tested for an interaction between each cultural value (parental familism, adolescent familism, parental independence/self-reliance, and adolescent independence/self-reliance) with each type of responsibility (adolescent, parent and shared) predicting each indicator of adolescent health (adolescent-reported adherence, parent-reported adherence, HbA1c, health-related quality of life, depression, and anxiety) for a total of 72 interactions. Eight interactions were significant. Those interactions were probed, and there was no discernable pattern to which interactions were significant. Due to this and due to the low number of significant interactions relative to the number of tests, the interactions were considered likely to be spurious.

Discussion

This was the first study to measure diabetes responsibility in the context of parent-adolescent interactions and the first to explore the role of cultural values in the division of diabetes responsibility for Latinx families. I hypothesized that when dyads discussed more shared and less individual responsibility for diabetes management tasks, adolescents would have higher adherence and quality of life, lower HbA1c, and fewer depression and anxiety symptoms, consistent with previous findings from primarily NHW families linking collaboration and shared responsibility to better adolescent health compared with individual responsibility (Helgeson et al., 2008; Wiebe et al., 2016; Young et al., 2014). However, contrary to my hypotheses, the way parents and adolescents discussed diabetes management tasks was not correlated with any measures of adolescent health. This discrepancy could be due to differences in methodology between the two studies.

Study 2 also explored the relationship between cultural values, diabetes responsibility, and adolescent health. Study 1 found that Latinx mothers reported less adolescent and more shared responsibility compared to NHW mothers, and therefore I hypothesized that when parents or adolescents endorsed the cultural value of independence/self-reliance they would report more adolescent responsibility, as that cultural value has been found to be more prevalent in European Americans compared with Mexican Americans (Knight et al., 2010). Likewise, I hypothesized that when parents and adolescents endorsed the Latinx cultural value of familism, they would report more shared responsibility (Knight et al., 2010). I found that these cultural values were not related to how families divided diabetes responsibility.

However, there were some associations between cultural values and adolescent health. Parental and adolescent independence/self-reliance was associated with lower quality of life, and parental independence/self-reliance was associated with greater adolescent anxiety. While I hypothesized that independence/self-reliance would be associated with lower adherence, lower quality of life, and higher HbA1c, I hypothesized that familism would be associated with the opposite, as previous studies have found familism to be associated with better psychological health, and familism has been linked to increased medication adherence for Mexican-Americans with schizophrenia (Campos et al., 2014; Ramírez García et al., 2006). Indeed, familism was associated with higher parent-reported adherence in Study 2, but it was not associated with indicators of psychological health (depression and anxiety).

Diabetes Responsibility and Adolescent Health

Unlike Study 1, Study 2 found no statistically significant associations between diabetes responsibility and adolescent health. This may be due to the fact that Study 2 used a different methodology than Study 1. In Study 1, mothers and adolescents responded to surveys about diabetes responsibility, while in Study 2 conflict discussions were coded for statements mentioning diabetes management tasks performed by the parent, adolescent, or both. The survey measures asked about who takes responsibility for diabetes management tasks, while conflict discussion codes included statements about individuals not completing tasks they were responsible for. Therefore, the DFRQ may measure who is actually taking responsibility, while the conflict discussion codes may measure who dyads consider to be responsible for management tasks. For example, a parent may consider it to be the adolescent's responsibility to check their blood sugar, but

the parent may often end up checking their blood sugar for them. When completing the DFRQ, the parent may report that they complete that task, while in a conflict discussion the discussion may turn to the adolescent forgetting to check their blood sugar. The fact that the discussion is about the adolescent forgetting implies that checking is seen as their responsibility, even though the parent may be the one who completes the task more often.

In addition, there were discrepancies in the proportion of each type of responsibility between Study 1 and Study 2, which may indicate that the DFRQ and conflict discussions measure slightly different constructs. During the conflict discussions, an average 62% of statements referred to adolescent responsibility, 11% of statements referred to shared responsibility, and 28% referred to parent responsibility. By contrast, in Study 1 Latinx mothers reported an average of 22%, 34%, and 32% adolescent, shared, and parent responsibility respectively, while adolescents reported 44%, 28%, and 26% of the same. It appears that in conflict discussions statements referred more to adolescent responsibility and less to shared responsibility than in surveys. This discrepancy may have to do with the conflict discussion task itself: because dyads were in conflict, conversation may have focused on tasks that the adolescent completed or failed to complete rather than on collaboration. The higher proportion of shared responsibility surveys may also be due in part to individuals selecting “equally responsible” for tasks where parents take responsibility about half the time while adolescents take responsibility about half the time, when these tasks would be categorized as adolescent or parent responsibility in conflict discussions. These discrepancies in the proportion of parent, adolescent, and shared responsibility between the two measures are worth investigating further to determine which method is more accurate, and they may explain why the results from Study 1 were not replicated in Study 2.

It could also be argued that the results did not replicate because Study 2 had a smaller sample ($n = 56$) than Study 1 ($n = 118$). However, both studies had similar numbers of Latinx adolescents: 55 in Study 1 and 56 in Study 2 and many correlations between diabetes responsibility and health were significant in only the Latinx sample of Study 1. Therefore, it seems likely that factors other than sample size contributed to the discrepancies between Study 1 and Study 2.

Cultural Values and Adolescent Health

Study 1 found that Latinx mothers are more likely to report shared responsibility and less likely to report adolescent responsibility than NHW mothers, and I hypothesized that these discrepancies may be due to differences in cultural values. However, contrary to my hypotheses, Latinx cultural values (independence/self-reliance and familism) were not associated with particular patterns of diabetes management in Study 2. It may be that Latinx mothers may report different patterns of diabetes responsibility than NHW families for reasons other than cultural values, or cultural values other than independence/self-reliance or familism may play a role. Mexican American children have been found to collaborate with their siblings more than European American children, so it is possible that the value of collaboration rather than familism drives shared responsibility for diabetes management (Alcalá et al., 2018). It is also worth noting that the dataset in Study 1 did not include information about cultural values, so more data is needed to test for a relationship between DFRQ responses and cultural values. It may be that DFRQ responses are correlated with cultural values, but conflict discussions are not.

Although cultural values were not associated with particular patterns of responsibility, cultural values were associated with some health outcomes. Specifically, adolescent and parental independence/self-reliance was associated with lower Quality of Life, while parental independence/self-reliance was associated with greater adolescent anxiety. The relationship between independence/self-reliance and adolescent health is consistent with the findings of Study 1 that adolescent responsibility was associated with adolescent health. Furthermore, adolescent familism was associated with higher adolescent reported adherence. The relationship between familism and higher adherence is consistent with the results of Study 1 that collaboration for diabetes management tasks was associated with higher adherence.

Limitations and Future Directions

One limitation of this study was the sample size. Although a sample of 55 is relatively large for an observational study with this population, power was still limited, and therefore it may not have been possible to detect some effects in this study. The number of fathers was also limited in this study. Although parents of all genders were invited to participate in the study, only 16% of the sample were fathers, so it was not possible to examine the effects of parental gender differences. Mexican American immigrant fathers were found to be less warm, accepting, and knowledgeable about young adolescents compared with mothers, and these differences in relationship quality may mean that results would be different if more fathers were included (Updegraff et al., 2009). Study 2 invited the parent most involved in diabetes management to participate, and previous findings have shown that mothers tend to be more involved in chronic illness management than fathers, so the representation of mothers in Study 2 is consistent with the literature (Quittner et al., 1998). Future investigations should study fathers specifically or actively recruit fathers in order to understand the role that parental gender plays in diabetes management.

Another limitation to Study 2 was that although both Study 1 and Study 2 measured diabetes responsibility, respondents in the Study 2 dataset did not complete the DFRQ, so scores from this novel measure could not be directly compared to that established measure. Future studies can compare the two measures to determine how much they correlate, and if parent or adolescent on the DFRQ correlate more strongly with the conflict discussion measure.

One strength of the DFRQ used in Study 1 is that it assesses a wide range of tasks, including giving insulin, making doctor's appointments, and telling the adolescent's friends about their diabetes. By contrast, the conflict discussion task used in Study 2 prompted parents and adolescents to discuss a specific topic that both had indicated they were in conflict about in the Diabetes Family Conflict Scale (Hood, et al., 2007). Therefore, this specific discussion task may have caused families to only discuss a few diabetes management tasks. For example, if parents and adolescents were prompted to discuss the adolescent forgetting to check their blood sugar, statements during the discussion may have mainly focused on who was responsible for that task and would focus less so on other tasks such as making doctor's appointments. This limitation can be addressed in future studies by employing an interview format, where interviewers ask dyads to describe the last time they performed specific diabetes management tasks such as giving shots, making doctor's appointments, and telling the adolescent's friends about diabetes in order to account for multiple tasks. These scores could be directly compared

to scores on the DFRQ to test if discussions of specific diabetes management tasks correspond to survey responses about those same tasks. However, there are cons to the interview format as well. In an interview, participants would likely know what researchers are measuring, whereas in the conflict discussion task in Study 2 families spontaneously discussed diabetes management tasks. This spontaneous discussion could mean that participants were less likely to over report their own diabetes responsibility, and families may have communicated in a way more similar to how they communicate normally due to a researcher not being present to interview them.

General Discussion

This was the first study to examine the role that the division of diabetes responsibility plays in adolescent health for Latinx adolescents, and the first to examine how culture and ethnicity are related to the division of diabetes responsibility between parents and adolescents. In a sample of Latinx and Non-Hispanic White mother-adolescent dyads, Latinx mothers reported more shared and less adolescent responsibility than NHW mothers. In this sample, mother-reported shared responsibility was correlated with higher adolescent adherence (mother and adolescent-reported). Adolescent-reported shared responsibility was also correlated with higher mother-reported adherence. The relationship between mother-reported shared responsibility and mother-reported adherence remained significant after controlling for demographic variables, and this relationship was stronger in Latinx dyads. Furthermore, adolescent-reported shared responsibility was correlated with lower HbA1c in the Latinx families, but this relationship was not significant in the hierarchical regressions that included the full sample plus control variables. These results replicate work by Hegelson et al. (2008) who found that shared responsibility was associated with higher diabetes adherence in a sample of primarily NHW dyads.

Study 1 also found that individual responsibility (mother and adolescent) tended to be associated with poorer adolescent health. Specifically, adolescent reports of adolescent responsibility were correlated with lower mother and adolescent-reported adherence. After controlling for demographic variables, mother reports of mother responsibility were associated with lower mother-reported adherence. These results are also consistent with Hegelson et al. (2008), who found that reports of parent responsibility were associated with lower adherence, and consistent with Hsin et al. (2009) who found that adolescent responsibility was associated with lower adherence for Latinx adolescents. These results indicate that optimal diabetes management may be achieved when parents and adolescents work together rather than parents or adolescents being in charge, and measures assessing who is responsible for diabetes management may be most valid when they conceptualize shared responsibility as qualitatively different from individual responsibility.

Unlike Study 1, there were no statistically significant associations between diabetes responsibility and adolescent health in Study 2. It was also hypothesized that the Latinx cultural value of familism would be associated with more shared responsibility, while the European American cultural value of independence/self-reliance would be associated with more adolescent responsibility. There were no associations between cultural values and diabetes responsibility in Study 2. The lack of replication of the associations found in Study 1 between diabetes responsibility and adolescent health in Study 2 could be due to differences in methodology. In Study 1, dyads were given the DFRQ which asked about multiple diabetes tasks, while in Study 2 dyads participated in a conflict discussion about specific tasks that they argue about. Future studies can utilize both measurements in the same study to test how much they are correlated to one another.

Although the results of Study 1 did not replicate in Study 2, it is likely that there is some association between the division of diabetes responsibility and adolescent health in Latinx families. Previous studies in NHW families have found that interventions designed to increase collaboration between parents and adolescents are associated with decreased blood glucose and hospitalizations, and researchers recommend that parents

remain involved but not over-involved in diabetes management as adolescents age (Hillard et al., 2016; Young et al., 2014). In Study 1, the association between shared responsibility and adherence was stronger for Latinx than NHW families, and there was a correlation between shared responsibility and HbA1c that was only significant for Latinx families. These results indicate that not only do associations between shared responsibility on the DFRQ and adolescent health replicate in Latinx families, but these associations can be stronger in that population.

Given the success of interventions to increase collaboration in Non-Hispanic White families, and the finding that shared responsibility may be associated with adolescent health in Latinx families as well, future studies can develop interventions that increase collaboration between parents and adolescents in Latinx families to test if interventions are successful in this population. Previous work has found that familism is a cultural value adopted by Latinx Americans, and therefore Latinx families may be especially receptive to these types of interventions (Knight et al., 2010). The present study did not find familism itself to be related to increased collaboration for diabetes management tasks, but the cultural value may be associated with increased receptivity to interventions that encourage collaboration.

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Table 1
Study 1: Descriptive Statistics by Ethnicity

Variable	Full Sample (<i>M/SD</i>)	NHW (<i>M/SD</i>)	Latino (<i>M/SD</i>)	<i>t</i> , X^2 (df)
N	118	62	56	
Female sex, %	54.2	46.8	62.5	2.65 (115)
Adolescent Age	13.24 (1.69)	13.18 (1.66)	13.32 (1.77)	.44 (115)
Pump status, %	25.4	30.6	19.6	1.88 (115)
Yes				
Mother Education	5.71 (2.13)	6.85 (1.45)	4.44 (2.04)	7.16 (113)**
Median neighborhood family income	\$62,000 (\$26,000)	\$72,000 (\$28,000)	\$51,000 (\$18,000)	4.68 (106)**
Years Since Dx	4.62 (2.84)	5.00 (3.09)	4.07 (2.40)	-1.75 (115)
Latinx, %	45.5			
Adolescent Responsibility (A)	.44 (.23)	.44 (.24)	.44 (.23)	-.05 (115)
Adolescent Responsibility (M)	.30 (.19)	.36 (.19)	.22 (.16)	-4.02 (115)**
Shared Responsibility (A)	.28 (.21)	.28 (.20)	.28 (.22)	-.03 (115)
Shared Responsibility (M)	.29 (.18)	.27 (.14)	.34 (.21)	2.24 (115)*
Parent Responsibility (A)	.26 (.21)	.27 (.21)	.26 (.20)	-.43 (115)
Parent Responsibility (M)	.35 (.20)	.38 (.18)	.32 (.21)	-1.67 (115)
HbA1c	8.55 (1.55)	8.45 (1.53)	8.69 (.23)	.83 (115)
Adherence (A)	4.04 (.68)	4.05 (.60)	4.01 (.78)	-.30 (113)
Adherence (M)	3.91 (.73)	3.80 (.72)	4.07 (.73)	1.96 (109)
Depression (A)	8.36 (6.09)	8.07 (5.93)	8.80 (6.42)	.63 (114)

Notes: HbA1c = glycemic control, Pump = use of insulin pump, (A) = adolescent report, (M) = mother report, Parental education is coded as: 1 = less than 7th grade, 2 = junior high school (9th grade), 3 = partial high school (10th grade or 11th grade), 4 = high school graduate, 5 = GED, 6 = partial college (at least one year), 7 = associate's/vocational degree, 8 = bachelor's degree, 9 = graduate or professional degree (master's, MD, PhD).

Table 2
 Study 1: Correlations Between Study Variables for the Full Sample

	1. Adolescent Res. (A)	2. Adolescent Res. (M)	3. Shared Res. (A)	4. Shared Res. (M)	5. Parent Res. (A)	6. Parent Res. (M)	7. Hba1c	8. SCI (A)	9. SCI (M)	10. CDI
1.	-									
2.	.44*	-								
3.	-.51**	-.18	-							
4.	-.21*	.22*	.26**	-						
5.	-.51**	-.25**	-.39**	-.09	-					
6.	-.45**	-.30**	.06	-.18	.43**	-				
7.	.15	-.06	-.17	-.04	.03	-.02	-			
8.	-.19*	-.17	.12	.19*	.08	.15	-.22*	-		
9.	-.24*	-.11	.23*	.26**	-.02	-.13	-.27**	.30**	-	
10.	.08	-.01	-.05	.01	-.04	.01	.20*	-.50**	-.14	-

Notes: HbA1c = glycemic control, Pump = use of insulin pump, (A) = adolescent report, (M) = mother report, Res = Responsibility, SCI = Self-Care Inventory/Adherence, CDI = Children's Depressive Inventory, Adolescent Sex 0=male 1=female.

Table 3
 Study 1: Correlations Between Study Variables by Ethnicity

	1 Adolescent Res. (A)	2 Adolescent Res. (M)	3 Shared Res. (A)	4 Shared Res. (M)	5 Parent Res. (A)	6 Parent Res. (M)	7 HbA1c	8 SCI (A)	9 SCI (M)	10 CDI
1	-									
2	.32* .54**	-								
3	-.56* -.47**	-.08 -.25	-							
4	-.30* -.10	.00 -.34**	.32* .12	-						
5	-.30* -.67**	-.16 -.37**	-.44** -.34**	-.15 .00	-					
6	-.38** -.53**	.00 -.64**	-.02 .17	-.10 -.23	.43** .42**	-				
7	.31* .10	-.02 -.02	-.31* -.01	-.13 .01	.09 .00	-.03 .03	-			
8	-.29* -.09	-.22 -.21	.16 .09	.23 .17	.13 .02	.25 .01	-.13 .31*	-		
9	-.29* -.19	-.16 -.03	.26 .18	.48** -.01	-.13 .06	-.35* .04	-.26 -.32*	.40** .22	-	
10	.16 .00	.10 -.04	.00 -.14	-.04 .04	-.19 .12	.04 .02	.03 .38**	-.48** -.50**	.19 -.13	-

Notes: HbA1c = glycemic control, Pump = use of insulin pump, (A) = adolescent report, (M) = mother report, Res = Responsibility, SCI = Self-Care Inventory/Adherence, CDI = Children's Depressive Inventory, Adolescent Sex 0=male 1=female; Plan Text = Latinx, **Bold** = Non-Hispanic White

Table 4
 Study 1: Hierarchical Regressions Predicting Adolescent Health from Responsibility Including Interactions with Ethnicity

	DV: HbA1c		DV: SCI (A)		DV: SCI (M)		DV: CDI	
Regressions using Adolescent Responsibility as a Predictor								
Step 1	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Sex	-.22*	.24**	-.18	.11	.03	.13*	.08	.07
Age (0=male, 1=female)	.14		-.24**		-.29**		.13	
Pump status (0=no pump, 1=pump)	.26**		-.08		.02		.12	
SES	-.19		.03		.12		.01	
Years Since Dx	.31**		.03		-.14		.16	
Ethnicity	-.06		.02		-.17		-.10	
Step 2		.00		.02		.01		.00
Adolescent Res. (A)	.09		-.02		-.13		.12	
Adolescent Res. (M)	-.02		-.14		.12		.12	
Step 3		.01		.02		.01		.02
Adolescent Res. (A) X Ethnicity	-.41		.33		-.15		.14	
Adolescent Res. (M) X Ethnicity	.23		.33		.49		.14	
Regressions using Shared Responsibility as a Predictor								
Step 1	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Step 2		.00		.03		.06*		.00
Shared Res. (A)	-.02		.02		.04		.02	
Shared Res. (M)	-.03		.19		.24*		.01	
Step 3		.01		.00		.04		.01
Shared Res. (A) X Ethnicity	.37		.04		.05		-.27	
Shared Res. (M) X Ethnicity	-.19		-.07		-.68*		.10	
Regressions using Mother Responsibility as a Predictor								
Step 1	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2
Step 2		.00		.00		.08*		.02
Parent Res. (A)	-.04		.00		.06		-.08	
Parent Res. (M)	.04		-.03		-.34**		.19	
Step 3		.00		.03		.01		.02
Parent Res. (A) X Ethnicity	-.16		-.05		-.04		-.25	
Parent Res. (M) X Ethnicity	.23		-.57		.44		.07	

Notes: Demographic variables were controlled for in Step 1 of all models. HbA1c = glycemic control, Pump status = use of insulin pump, (A) = adolescent report, (M) = mother report, Res = Responsibility

Table 5
Study 2: Descriptive Statistics of Study Variables

Variable	Full Sample (M/SD)
N	55
Female sex, %	55
Adolescent Age	12.44 (1.57)
Pump status, % Yes	29
Primary caretaker education	2.30 (1.17)
Median neighborhood family income	\$25,000- 40,000
Years Since Dx	5.29 (3.39)
Generation status	1.45 (.50)
ISR (A)	3.27 (.73)
ISR (P)	3.72 (.73)
Familism (A)	4.05 (.60)
Familism (P)	4.06 (.63)
Adolescent Responsibility	.62 (.21)
Shared Responsibility	.11 (.13)
Parent Responsibility	.28 (.19)
HbA1c	8.59 (1.31)
Adherence (A)	4.22 (.46)
Adherence (P)	4.27 (.50)
Quality of life	71.80 (12.91)
Depression	17.09 (6.66)
Anxiety	1.52 (.38)

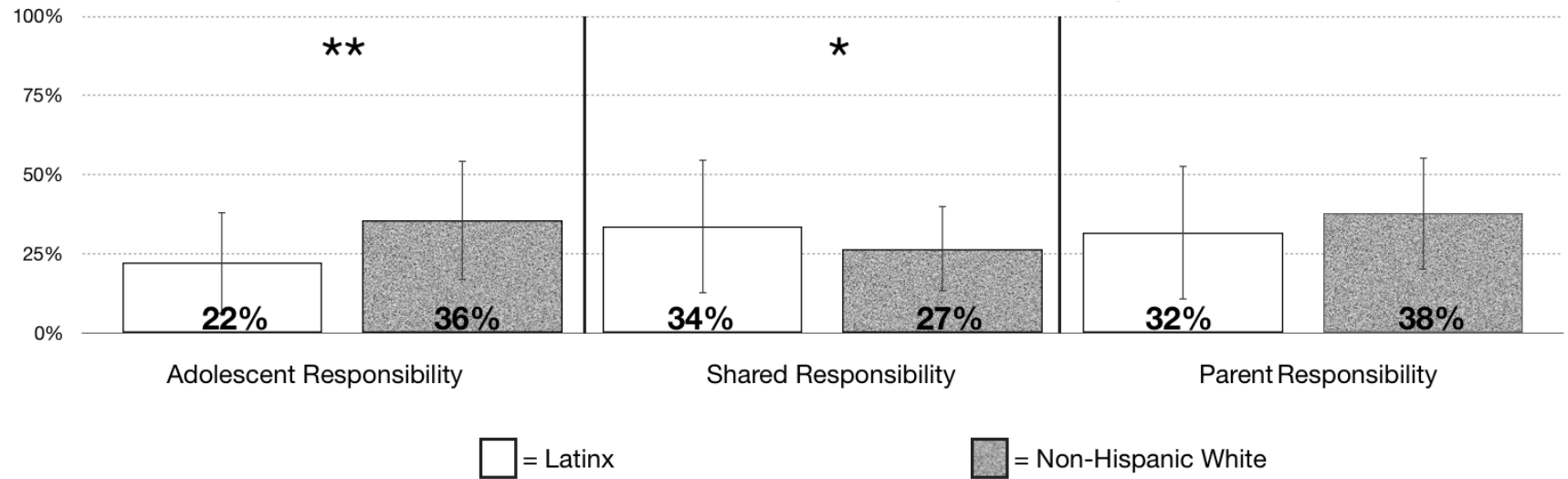
Notes: HbA1c = glycemic control, Pump = use of insulin pump, (A) = adolescent report, (P) = parent report, Parental education is coded as: 1 = some high school or less, 2 = high school graduate or equivalent, 3 = some college, 4 = associates/vocational degree, 5 = bachelor's degree, 6 = master's degree, 7 = MD, PhD, or JD

Table 6
 Study 2: Correlations Between Study Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
	ISR (A)	ISR (P)	Familism (A)	Familism (P)	Adolescent Res.	Shared Res.	Parent Res.	HbA1c	SCI (A)	SCI (P)	QOL	CESD	STAI
1	-												
2	.25	-											
3	.42**	-.02	-										
4	.35**	.12	.32*	-									
5	.00	.14	.00	-.07	-								
6	.00	-.13	-.06	-.05	-.50**	-							
7	.00	-.06	.04	.11	-.80**	-.12	-						
8	-.13	-.13	-.02	-.12	.12	-.13	-.04	-					
9	.12	-.14	.29*	.19	.00	.08	-.07	-.12	-				
10	.10	-.20	-.06	.22	.13	.03	-.12	-.25	.39**	-			
11	-.31*	-.33*	.02	-.07	.00	.10	-.07	-.22	.44**	.20	-		
12	.03	.26	.06	-.20	.11	-.12	-.04	.00	-.15	.11	-.43**	-	
13	.24	.36**	-.09	-.03	.14	-.16	-.05	.22	-.43**	-.27*	-.78**	.45**	-

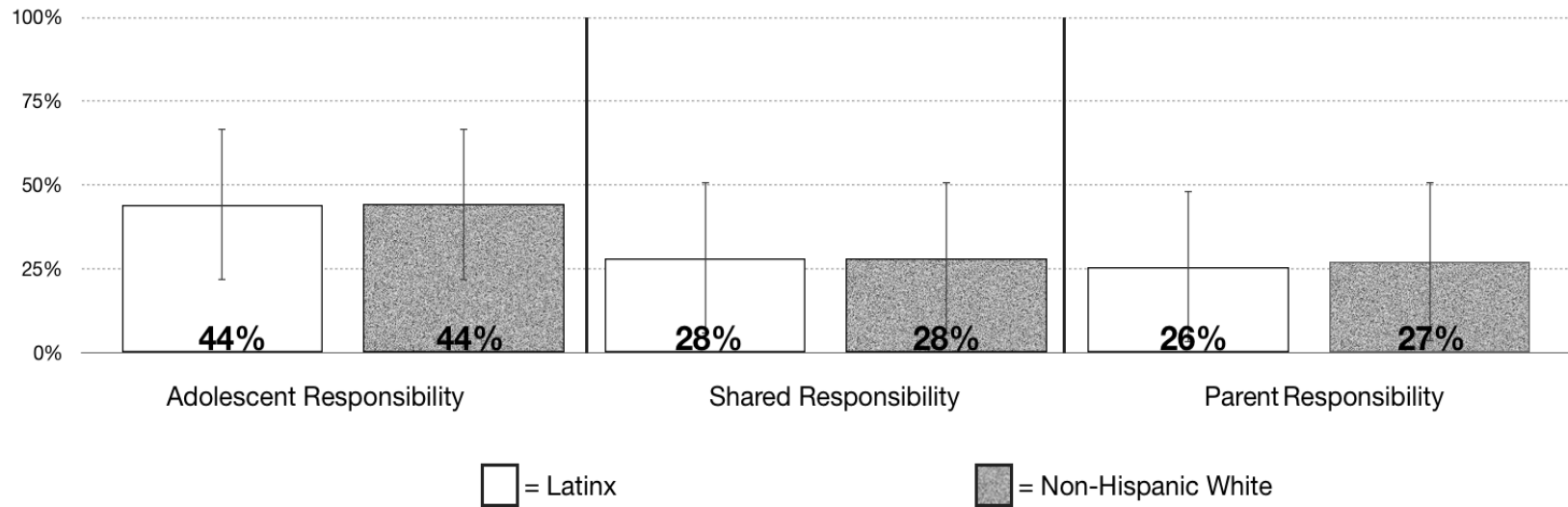
Notes: ISR = independence/self-reliance, HbA1c = glycemic control, (A) = adolescent report, (P) = parent report, Res = Responsibility, QOL = health-related quality of life, CESD = Center for Epidemiologic Studies Depression Scale, STAI = State-Trait Anxiety Inventory, Adolescent Sex 0=male 1=female

Figure 1. Study 1: Mother reports of diabetes responsibility



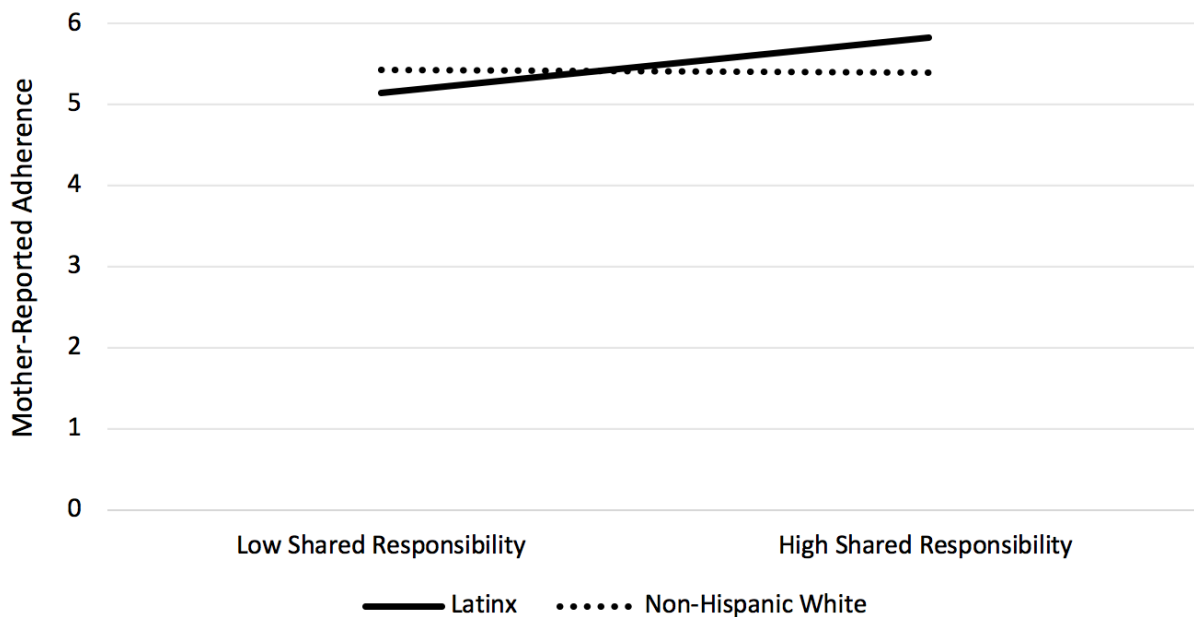
Notes: Adolescent Responsibility: $t(115) = -4.02^{**}$, $d = .76$; Shared Responsibility: $t(115) = 2.24^*$, $d = .41$; Parent Responsibility: $t(115) = -1.67$

Figure 2. Study 1: Adolescent reports of diabetes responsibility



Notes: Adolescent Responsibility: $t(115) = -0.05$; Shared Responsibility: $t(115) = -0.03$; Parent Responsibility: $t(115) = -0.43$

Figure 3. Study 1: Interaction between ethnicity and mother-reported shared responsibility predicting mother-reported adherence



Notes: Simple slope tests: Latinx: $t(115) = 3.32^{**}$; Non-Hispanic White: $t(115) = -0.14$, n.s.

Appendix

Each sentence of the transcript will be added to a line in the Diabetes Responsibility Coding Spreadsheet. Below are instructions for how to code each column.

Columns A, B, and C

Column A: “Coder Initials”	Column B: “Subject Number”	Column C: “Time Segment”
Write your initials.	Write the subject number.	Select the time segment in the video of the section you are coding. It should appear in the transcript, but it might not with earlier transcripts. If this is absent from the transcript, it is okay to leave it blank.

Columns D and E

Column D: “Coder Notes”	Column E: “Researcher’s Notes”
<p>You will not write notes for every line, but if you were not sure how to code something, or if you do not know if others will agree with your code(s) for this row, make a note of it here.</p> <p>Also, if you think two lines need to be split or combined, indicate that here, and send me an email about it so I can fix the issue.</p>	I will use this column to respond to your codes and notes.

Columns F and G

Column F: “Who is Speaking?”	Column G: “Sentence”
This indicates who said the sentence coded in that line. This will be filled out by me before you code.	<p>Each sentence from the transcript will have its own line which will be pasted in the “sentence” column. When you code a participant, I will paste the sentences in beforehand, so you should not have to fill this part out.</p> <p>If you see two sentences in the same line or two lines that need to be combined, make a note of it under “coder notes” and email me about it.</p>

Column H: "Codable"

What should I write here?	Food/Eating
<p>Mark "yes" if the sentence mentions the child, parent or both performing an action related to diabetes management. Otherwise mark "no".</p> <p>To count as diabetes management the action must a) be intended to manage diabetes and b) must be under the actor's control.</p> <p>If you are unsure if the action is under the actor's control, mark "no". If the speaker believes the action is under the actor's control, but others may disagree, mark "yes". Always code from the perspective of the speaker.</p> <p>You should use the lines before and after the line you are coding for context. (See example below.)</p> <p>If you are sure that the speaker is discussing a diabetes management task, and you have all the other information needed to code the line, you should mark it as "codable", even if the section where they specify what the task was is vague or inaudible.</p> <p>However, it only counts as codable if both the action and the person doing the action are mentioned explicitly in the line. It does not count if the person just agrees with what someone else has said previously. (See example below.)</p> <p>If the speaker trails off in the middle of the sentence, or there is a section of the line that is inaudible, you can still count it if a diabetes task is present somewhere in the line. You can also still count it if it is very clear what was said from the context of the conversation (lines before or after that line). If there is no diabetes management task, or it is unclear what was said or meant, then the line is not codable.</p>	<p>The action of eating in and of itself does not count as diabetes management, because eating is not automatically related to diabetes management.</p> <p>However, if someone mentions eating to manage their diabetes, you will mark "yes".</p>

<p>Examples:</p> <p>Child: I started taking my notebook to record my blood sugar to school with me. (intended to manage diabetes; is under the child's control)</p> <p>Parent: I gave you your shot. (is intended to manage diabetes; is under the parent's control)</p> <p>Parent: I made that doctor's appointment for you. (intended to manage diabetes; is under the parent's control)</p> <p>Child: I have the glucose monitor on me. (is intended to manage diabetes; is under the child's control)</p> <p>Child: I take my glucose tabs to school. (Codable) Next line: Parent: You do. (Not codable, because even though the parent agrees with the child, they don't specifically say the task or who is doing it in their own words.)</p> <p>Child: We talked about this a lot. (Codable) Next line: Parent: We really did. (Not codable, because the parent is agreeing with the child, and not mentioning the task themself.)</p> <p>Child: We talked about this [remembering to give shots] a lot. (Codable) Next line: Parent: We really do talk about it a lot. (Codable, because the parent states the task [talking about it] and who is doing it [we] in their own words)</p> <p>Child: I started doing bad. Use context to determine what they mean by 'doing bad'. If they meant their health declined, then it would be "not codable." If they meant that they started doing a bad job at managing their diabetes it would be "codable". If it is unclear what is meant, mark "not codable".</p>	<p>Example:</p> <p>"Child: I had a snack when I got home." Coded as "No."</p> <p>"Child: I had a snack when I got home to raise my blood sugar." Coded as "Yes"</p>
---	---

Column I: "Task 1"

How to Divide Tasks	What to Write Under "Task 1"
<p>Each time a person does a new action related to diabetes management, it is its own task.</p> <p>Typically, the tasks will be separated with words like "and" or "or".</p> <p>If the speaker describes the same task twice, once as something that actually happened and once as a hypothetical, divide into two tasks: one for the hypothetical and one that actually happened. For example, if the participant says they have done something in the past and they might do it again, this would be two tasks.</p>	<p>Write a short summary of the first task in this line.</p> <p>If there are multiple tasks in the line, you will use Column O for task 2 and Column S for task 3 and so on.</p>
<p>Example:</p> <p>"I checked my blood sugar and took insulin." "checked blood sugar" would be one task and "took insulin" would be another.</p> <p>"Ideally I would rather you eat a lunch that we prepare at home." The child eating the lunch would be one task, and "we prepare at home" would be a second task. This is because eating the lunch and preparing the lunch at home are separate actions.</p> <p>"I used to bring my bag to cheerleading practice, and I could start doing that again." "I used to bring my bag" would be one task and would be coded as "actually happened." "I could start doing that again" would be a second task and would be coded as "hypothetical".</p>	<p>Example:</p> <p>"I checked my blood sugar and took insulin." "checked blood sugar" should be under "Task 1" and "took insulin" should be under "Task 2"</p>

Column J "Who doing task"

What should I write here?	Who is "we" referring to in the sentence?	Actions performed by people other than the parent/child	Commands
<p>Select who is doing the action for that line. The parent, the child or both.</p>	<p>If the sentence includes the word "we" assume "we" is referring to the parent and child, unless another person was mentioned in the conversation who might be a part of "we." If it is unclear who "we" is, mark "not codable."</p> <p>If "we" refers to the speaking parent and another parent or guardian, code the line as "parent" doing the task. If the task is done by a parent or guardian who is not present in the conversation, the line is not codable.</p>	<p>These are not codable. However, if the speaker uses the word "we" to refer to themselves and another person doing a task, the line is codable.</p>	<p>When the sentence is a command, the person doing the action is the person the command is directed towards (see example below.)</p>
<p>Example:</p> <p>Child: I checked my blood sugar. Select "child" on Column F</p>	<p>Example:</p> <p>"I'd rather you eat a dinner we cook at home." Assume "we" refers to the parent and child, unless the speaker refers to another person earlier in the conversation.</p> <p>Parent: When your dad gets home, we can go over your readings together. It is unclear who "we" refers to in this sentence. Is it the parents? The mother and parent and the child? The father and the child? Since it is unclear, just mark "not codable"</p>	<p>Examples:</p> <p>Parent: Your sister can help give you your insulin when I'm at work. This sentence is not codable.</p> <p>Parent: When your dad gets home, we can go over your readings together. It is unclear who "we" refers to in this sentence. Is it the parents? The mother, father, and child? The father and the child? Since it is unclear, just mark "not codable"</p>	<p>Example:</p> <p>Parent: (to child) Start taking your diabetes bag with you to volleyball practice. Select "child" because the child would be the one to take their bag to practice. Even though the child is not mentioned in the sentence, they would be the one doing the action.</p>

Column K "Could/Hypothetical", "Should/Command", "Actually Happened"

What should I write here?	What if I am unsure if the action actually happened?	Questions using "should"	"Why did you..." / "Why didn't you..."
<p>For diabetes management tasks, choose if the statement is:</p> <p>1) Something that might happen or could happen. (Mark Hypothetical/Could in Column I)</p> <p>2) A statement that makes a value judgement about how to do a diabetes management task, a direct command to someone else, or a statement that the speaker or someone else "will" do something. In order to count as "should command", there must be a value judgement made in that line. The value judgement cannot be inferred from context. If no value judgement is present, but the task has not actually happened, mark "could/hypothetical". (Mark Should/Command in Column I).</p> <p>3) A management task that already happened (Mark "Actually Happened" in Column I)</p> <p>(see next section for additional examples)</p>	<p>If it is ambiguous if the speaker is talking about an action that actually happened or a hypothetical, mark "Could/Hypothetical".</p>	<p>Sometimes the word "should" will appear in a question like, "Should I get a notebook to record my readings?" Even though the sentence has the word "should," the speaker is not saying that they should do this thing, but rather they are considering doing it. So, questions containing "should" are marked as "Hypothetical/Could".</p>	<p>When the speaker asks the other person "why did you..." or "why didn't you..." they are implying that the person did or did not do something, so these sentences are coded as "actually happened."</p> <p>Typically, these sentences are also coded as "detrimental", because when the speaker asks the other person why they did or did not do something, it is usually because they think the other person made the wrong choice.</p>

<p>Examples:</p> <p>“I could wake up earlier so I can have a better breakfast.” Mark Hypothetical/Could in Column I</p> <p>“I should wake up earlier so I can have a better breakfast.” Mark Should/Command in Column I</p> <p>“I will wake up earlier so I can have a better breakfast.” Mark Should/Command in Column I</p> <p>“You could carry a notebook around to mark your readings.” Mark Hypothetical/Could in Column I</p> <p>“You should carry a notebook around to mark your readings.” Mark Should/Command in Column I</p> <p>“Start carrying a notebook around to mark your readings.” Mark Should/Command in Column I</p>	<p>Example:</p> <p><i>There are multiple tasks in this sentence, the one we will focus on is in bold.</i> Parent: Ideally I’d rather you eat a lunch that we prepare at home and that we know how much carbs is in it and there isn’t going to be an issue when you’re eating pizza and you’re not eating it at your regular lunch time. In this case, it is unclear if the parent is referring to a time that the child actually ate pizza and ate at an unusual time, or if they were giving this as an example of a time the child would not be eating at home. Because it is ambiguous, this is coded as “Could/Hypothetical”.</p>	<p>Examples:</p> <p>Should I start giving myself shots in the leg? Mark Hypothetical/Could in Column I</p>	<p>Examples:</p> <p>Parent: Why did you forget your insulin? Mark “Actually Happened”, because the child actually forgot their insulin. Also mark “detrimental”, because doing so was detrimental.</p>
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Column K Continued: Difference Between "Could/Hypothetical," "Should/Command," and "Actually Happened"

Could/Hypothetical	Should/Command	Actually Happened
<p>A statement about a management task that could happen in the future that does not make a value judgement about if said task was good or bad, better or worse.</p> <p>Statements that end in a question to clarify if the statement is true also qualify as Could/Hypothetical. For example, if the parent says, "You checked when you get home from school," it counts as "Actually Happened." But if they say, "You checked when you get home from school?" it counts as "Could/Hypothetical," because it is not clear if this task actually happened, and the parent is clarifying.</p>	<p>A statement about a management task that could happen in the future that does make a value judgement about if the task is good or bad.</p> <p>Statements that count as should/command typically fall into one of three categories: A statement from the parent to the child about what they should do differently (example 1), a command from the parent to the child (example 2), a statement that the speaker will do a task in the future (example 3).</p>	<p>A statement about a task that happened in the past, a task that someone forgot to do in the past, or a task that happens during the conversation.</p>
<p>Examples:</p> <p>Parent: You could start to carry a notebook to school to record your readings.</p> <p>Parent: You checked when you got home from school?</p>	<p>Examples:</p> <ol style="list-style-type: none"> 1. Parent: You should start to carry a notebook to school to record your readings. 2. Parent: You are going to start to carry a notebook to school to record your readings. 3. Child: I am going to start to carry a notebook to school to record my readings. 	<p>Examples:</p> <p>Parent: We check your sugar before you go to school.</p> <p>Parent: We forgot to check your sugar before you go to school.</p> <p>Child: *checks blood sugar* "My sugar is at..."</p>

Column L "Detrimental/Beneficial"

What should I write here?	What do I do when only the speaker thinks the action is good or bad?	What if the action is good for the child's health, but harmful in other ways?
<p>If the task was coded as "Actually Happened", code if the task was beneficial or detrimental. If you are coding for reliability, then wait until you and the other coder discuss agreement about column K before coding this column.</p> <p>In order to count as beneficial or detrimental the speaker must believe that action was helpful or harmful towards the child's health.</p>	<p>Sometimes the parent and child will disagree about if an action is beneficial or detrimental, or you may disagree with the speaker about if an action is beneficial or detrimental. In these cases, remember to code if the <i>speaker</i> thinks the action is beneficial/detrimental. Always code from the speaker's perspective.</p>	<p>Sometimes an action will be beneficial to the child's health, but detrimental in other ways. In these cases, code the action based on how it affected the child's health.</p>

<p>Examples:</p> <p>Child: I started taking my notebook to record my blood sugar to school with me. (Beneficial)</p> <p>Parent: You forgot to check your blood sugar when you got home from school. (Detrimental)</p>	<p>Examples:</p> <p><i>Child and Parent Disagree:</i></p> <p>Child: Playing outside will help lower my blood sugar. Beneficial, because the child thinks it is beneficial.</p> <p>Parent: Playing outside will not change your blood sugar. Not codable, because the parent does not consider playing outside to be related to the child's health.</p>	<p>Example:</p> <p>Parent: I had to take time off work to take care of you when your blood sugar was super low. Taking time off work may have negatively impacted the family's income or the parent's job, but taking time off work was good for the child's health, so this would be coded as beneficial.</p> <p>Child: You always nag me to take my insulin. Neither, because it is not clear if the child thinks being nagged is beneficial or detrimental to <i>their health</i>. The child clearly does not like being nagged, but it is considered not beneficial or detrimental, because it is not clear how it is related to the child's health.</p>
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Column "M"/"Task 2"

<p>What should I write here?</p>
<p>If there are multiple management tasks in the same line, fill out this column the way you did for "Task 1," but with the second task mentioned in the sentence. Code the rest of the columns as you did for Task 1</p>
<p>Example: Child: "I checked my blood sugar and took insulin." "Checked blood sugar" should be under "Task 1" and, "took insulin," should be under "Task 2."</p>