THE ROLE OF CONFLICT COMMUNICATION IN THE LINK BETWEEN MARITAL AND SIBLING RELATIONSHIP QUALITIES

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The undersigned, appointed by the dean of the Graduate School, have examined the thesis entitled:

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and hereby certify that, in their opinion, it is worthy of acceptance.

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DEDICATION

Many thanks to God,

my parents Gabriel and Josephine Odudu,

my brother and sisters,

extended family members,

and friends.

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Abstract

Research shows that persistently intense marital conflict has deleterious effects on children, leading to adjustment problems such as anxiety or aggression (Grych & Fincham, 2001; Ha, Overbeek, Vermulst, & Engels, 2009). However, research findings on the association between marital and sibling relationship qualities have not been consistent, where research has shown a 'spillover' effect from marital to sibling relationship quality and how siblings demonstrate a 'compensation' effect (Roth, Harkins, & Eng, 2014; Stocker & Youngblade, 1999). Thus, the present study examined whether observed sibling interactions (the extent to how siblings discuss conflict constructively or destructively) moderate the association between marital relationship quality and sibling relationship quality. Hierarchical linear regression was utilized to assess the hypothesized associations between marital and sibling relationship quality, and whether communication served as a moderating variable between marital and sibling relationship quality. No support found for spillover or compensation effects for older or younger siblings. However, sibling conflict communication was consistently associated with sibling relationship quality and older siblings' significant simple slopes analyses. Findings suggest that older siblings are more directly affected by the marital relationship and that other moderating variables besides conflict communication may impact the direct association between marital and sibling relationship quality.

Key words: conflict, sibling relationship quality, marital relationship quality, communication

Introduction

Siblings present a unique relationship within families as they include a culture, language, and understanding independent of parents and other family members (Brody, 1998; McHale, Updegraff, Helms-Erikson, & Crouter, 2001). In light of the 80% of families in the United States having at least two children, a dearth of research has examined sibling relationships and their implications (King, Alam, Promoff, Arrazola, & Dube, 2013). Although sibling relationships should be influenced by the marital relationship since parents establish the foundation of the family, research on how different family relationships interact with, and influence, one another is limited. Concepts such as how interactions of the marital relationship may spillover into the sibling relationship, have not been explicitly examined. Furthermore, research findings supporting theory, such as how siblings can compensate for the lack of parental positivity in their relationship by improving their own relationship, have seldom been investigated. The current study considers the link between marital relationship quality and sibling relationship quality. Moreover, the nature of how the marital relationship may influence the sibling relationship is understudied, specifically, certain moderators affecting the relationship. The current research examines the association between marital relationship quality and the quality of sibling relationships and whether sibling conflict communication moderates this association.

The Importance and Nature of the Sibling Relationship

Sibling relationships are often the longest-lasting close relationship an individual will have over his or her life-course (Stocker, Lanthier, & Furman, 1997). Much of a person's learning and development in childhood, including social, moral, and cognitive

growth, can be attributed to interactions with their siblings (Dunn, 1983; Furman & Buhrmester, 1985; Stocker, 1993). In addition, siblings contribute to each other's individual psychological adjustment and prosocial development (Harper, Padilla-Walker, & Jensen, 2014). Therefore, it is important that this specific dyadic relationship be studied.

Interestingly, the nature of sibling relationships changes with age. Kim and colleagues found that younger siblings at age 13 on average, reported higher levels of intimacy than older siblings (Kim, McHale, Osgood & Crouter, 2006). Sibling relationships tend to become more equal as both siblings move toward young adulthood. The study upholds the notion that by the end of adolescence, the sibling relationship is at a stage of maturity, where competent conversations can take place with less antagonism, quarrelling, and destructive forms of communication (Lindell, Campione-Barr, & Greer, 2013). However, Kim and colleagues (2006) found sibling conflict reaches a peak around age 12, and subsequently decreases as siblings grow older. This peak in conflict is particularly interesting as it indicates a developmental shift in the sibling relationship. Based on the literature, if normative conflict ceases to decrease, it can signal a problem in the sibling relationship. In the current study, adolescents between ages twelve and eighteen years are considered. This age range is being examined because it is the time when sibling relationships begin to endure less conflict and to change to become more egalitarian.

Association Between Marital Quality and Sibling Quality

As proposed by Family Systems Theory, there is a hierarchy in the family that is responsible for socialization, where appropriate societal behaviors are taught by the

parents and learned by the children (Broderick, 1993). It is proposed that parents set the tone for how the family interacts as well as create a specific family culture and environment. Therefore, there should be a relation between parents' marital quality and siblings' relationship quality. As reviewed in the sections below, the literature on the direct association between marital relationship quality and sibling relationship quality is mixed regarding outcomes. Some studies have found evidence of a positive association between the two (e.g., if the marriage is characterized by positive marital quality, the siblings will also experience positive relationship quality), while other studies have found evidence for a positive sibling relationship compensating for a negative marital relationship (Roth, Harkins, & Eng, 2014).

In addition, the degree to which marital relationship quality is associated with each sibling's perceptions or reports of their relationship quality may be affected by birth order. As proposed by the resource dilution theory (Blake, 1981), parents allocate resources differently to each child. The amount of resources (e.g., time investment) that a child receives is a function of the number of siblings present during the same time period (Hertwig, Davis, & Sulloway, 2002). In essence, the finite amount of resources available for allocation to younger siblings, despite attempts of parents to treat siblings equally, is due to being born later than the older sibling(s). Increased resources, as well as greater time parents spend directly with older siblings, may result in older siblings being more socialized by their parents than younger siblings. It may also be the case that for younger siblings, parents' socialization may be more indirect than for older siblings and that a close familial peer—their older sibling—may serve as a more direct socializer.

Sibling Conflict Communication as a Moderator

The present study examines adolescent siblings' conflict communication, both constructive (continued social interaction about a specific issue at hand by attempting to reason, explain, understand others' perspectives, and controlling one's affect) and destructive (having high levels of negative affect while continuing to escalate intrusive behavior, with little respect for others' opinions) as a moderator of the association between marital quality and sibling quality (Deutsch, 1973; Howe & Recchia, 2008; Rinaldi & Howe, 1998; Vandell & Bailey, 1992).

Unlike other close relationships, conflict in sibling relationships arise frequently (McHale, Updegraff, & Tucker, 2000). Starting from early childhood, a power dynamic is established between siblings, where the eldest sibling holds the most power and highest status. However, a power shift begins to occur in adolescence, where the sibling relationship becomes more egalitarian. As the shift towards egalitarianism grows, sibling antagonism, quarreling, and competition peak during early adolescence between siblings (Buhrmester & Furman, 1990; Campione-Barr, 2017).

Notably, not all conflict ends badly. Recchia and Howe (2010) found that many children's conflicts end in compromise, suggesting that a favorable and agreeable outcome can be reached through negotiation. They also found that the more positive the conflict resolution process, the more positive the relationship between siblings were. Previous research has found that conflict communication and resolution processes can be evaluated as constructive or destructive. For the purposes of this study, constructive conflict can be defined as continued social interaction about a specific issue at hand by attempting to reason, explain, understand others' perspectives, or control one's negative

affect. Through effective communication, constructive conflict resolution strategies, such as active listening, can be developed between siblings. Destructive conflict can be defined as individuals having high levels of negative affect while continuing to escalate intrusive behavior, with little respect for others' opinions (Deutsch, 1973; Howe & Recchia, 2008; Rinaldi & Howe, 1998; Vandell & Bailey, 1992; Campione-Barr, 2014). Destructive conflict resolution strategies include interrupting and physical altercations and have been found to significantly predict negative sibling relationship quality (Recchia & Howe, 2009).

By adolescence, it is very possible that youth have learned from individuals outside of the home how to negotiate conflicts. Despite parents remaining important sources of influence regarding long-term issues, such as career choices, moral issues, and values, youth can also learn social skills from peers and romantic relationships (Smetana, Campione-Barr, & Metzger, 2006). Youth can learn how to negotiate conflicts from peer groups; further, peer groups are arenas to improve social skills and competence (Collins & Steinberg 2006). By adolescence, youth friendships tend to become closer and more intimate than they were earlier in childhood, with increased disclosure and communication behaviors, allowing for the transmission of information between friends to become easier (Furman & Buhrmester, 1992). Another forum for adolescents to learn conflict negotiation and resolution is from romantic relationships. These relationships tend to provide more support for each individual in adolescence than the support garnered from mothers (Furman & Burhmester 1992). Advocating for oneself, as well as mitigating problems jointly, are both viable conflict communication skills that can be learned outside of the household in romantic relationships. Based on these relationships

cultivated outside of the home, siblings can learn how to actively manage conflict not learned from their parents.

Spillover from the marital relationship to the sibling relationship. The emotional security hypothesis suggests that problematic marital relationships can affect children's well-being. Specifically, exposure to marital conflict and anger can make children feel less emotionally secure, which can increase their chances of having an insecure attachment and negatively affect their development (Davies & Cummings, 1994). Moreover, insecure attachment would make it difficult for siblings to establish lasting, high-quality relationships.

Although, the emotional security hypothesis does not speak directly to how the marital relationships affect sibling relationships, social learning theory speaks more directly to this issue (Bandura, 1977). According to social learning theory, there may be spillover from qualities of the marital relationship to qualities of the sibling relationship such that the sibling relationship resembles the marital relationship. Social learning theory hypothesizes that observation by the child of the parents can explain similarities across relationships. Observational learning is more likely to occur when the model a child is imitating is similar to the imitator and of high status (Bandura, 1977). Because both the marital and sibling relationships are egalitarian, the sibling dyad may be especially inclined to model behaviors exhibited in the marital relationship.

Research demonstrates that the quality of the marital relationship affects the quality of sibling relationship quality. In regard to positive relationship quality, at least one longitudinal study provided evidence for how positivity within the marital relationship can contribute to a sense of positivity in family dynamics (Ackerman, Kashy,

& Donnellan, 2011). When parents engaged in positivity towards one another during a conflict resolution task, the same positive behavior was acted out by siblings in a separate task. Negativity within the marital subsystem also has been found to be predictive of conflict within the sibling relationship. In a study examining marital conflict and observed and self-reported sibling relationship quality, siblings who indicated high levels on negative dimensions, typically reported low levels on positive dimensions of relationship quality when the marital relationship was in conflict (Iturralde, Margolin, & Shapiro, 2013). In addition, Stocker and Youngblade (1999) found that marital conflict predicted low sibling warmth and poor relationship quality.

Compensation given poor marital relationship with positive sibling relationships. Despite the theory and research in support of the idea that marital quality is associated with sibling quality, such that siblings' relationship quality resembles that of their parents, a small line of research has not found spillover and instead indicates compensation—that a negative marital relationship leads to siblings compensating with a positive sibling relationship. These findings fit with the idea that siblings have the propensity to actively affect their own relationships.

Most of the findings consistent with the compensation hypothesis focus on the impact of divorce on sibling relationships. For example, Jennings and Howe (2001) found a relation between divorce and sibling relationship quality with 54% of the participants reporting a positive change in their sibling relationship. Similarly, Bush and Ehrenberg (2003) found that 93% of their sample indicated divorce had an impact on their sibling relationship. Of the 93%, more than 66% participants stated the divorce brought them closer to their siblings. For most, the increased closeness brought about positive feelings

within the relationship, including being able to talk to the other sibling about how the other felt about the divorce. In another study (Roth, Harkins, & Eng, 2014), marital conflict within divorce was associated with positive sibling interactions, where siblings grew closer together and female participants exhibited care-taking whether they were the older or younger sibling in their dyad. Although the sample of the Roth et al., study (2014) concerned marital divorce, the findings suggest that in the face of marital negativity, siblings can be a protective factor. Furthermore, the purpose of the present study is to see if the same compensation effects are present in stable, marital family dynamics.

The way in which siblings approach conflict resolution may then moderate the effects of positive marital quality on negative sibling quality, as well as the effects of negative marital quality on positive sibling quality. Considering the marital relationship serves as a model for the sibling relationship, constructive or destructive conflict communication may be a moderating variable between these two factors. In terms of negative marital quality, when siblings engage in conflict destructively, spillover effects might be expected. That is, when conflict is destructive, siblings may respond to parents' high negative relationship quality by having a relationship that is also high in negative quality. On the contrary, when siblings engage in conflict constructively, compensation effects may result, where siblings may take on the responsibility of establishing a relationship high in positive quality when exposed to negative marital quality.

Depending on the how siblings' constructively or destructively communicate about conflict, the association between positive martial quality and positive sibling quality also may differ. For siblings' engaging in constructive conflict communication,

spillover effects might be expected. In contrast, in the context of high destructive conflict communication, siblings of parents with a highly negative marital relationship, may also formulate a relationship high in negative quality.

The Present Study

The primary goal of the present study was to test whether observed sibling conflict communication moderates the association between marital relationship quality and sibling relationship quality over one year. The first aim of the study was to examine the direct associations between marital relationship quality and sibling relationship quality. As proposed, spillover effects or compensation effects were possible. The second aim of the study was to examine the possible moderating effect of sibling constructive and destructive conflict communication on the association between marital relationship quality and sibling relationship quality.

The present study involved a particularly strong methodology for addressing the current research questions. In order to assess the impact of martial relationship quality on sibling relationship quality, mothers reported on martial quality, and adolescent siblings reported on their relationship quality at two different time points using a self-report relationship measure. In addition, sibling conflict communication was observed and coded by trained raters. The majority of sibling conflict research has assessed adolescent sibling conflict through questionnaires or interviews. Observing sibling conflict and its communication quality directly in the current study is beneficial because it reduces concerns regarding self-report bias. Another benefit of including observational analysis is that the relation of conflict and relationship quality cannot be artificially inflated due to shared method variance. We hypothesize that compensation effects will arise such that a

negative marital relationship quality will predict positive sibling relationship quality if and only if sibling conflict communication is constructive. Furthermore, we hypothesize spillover effects such that a positive marital relationship quality will predict positive sibling relationship quality if and only if sibling conflict communication is constructive.

Methods

Participants

The present study utilized data from two different time points from a larger study of families with at least two adolescent siblings who were originally studied over the course of four years. The original sample contained 145 families at Time 1 and dropped to 137 families at Time 2 due to attrition. For the purpose of the present study, we only included 2-parent, intact, married families, due to wanting to see if spillover or compensation effects manifest in stably married families (Stocker & Youngblade, 1999). Because of this, of the 137 families in the original sample at both Times 1 and 2, only 101 families were intact (married) at both time points. Siblings with one first-born in eighth, tenth, or twelfth grade, and their second eldest sibling (less than 5 years younger) were eligible to participate in the study. Pairs of siblings were not divided relatively equally by age, as there were a lot fewer participants in the oldest cohort (preadolescent-early adolescent dyads = eighth graders with younger siblings, $n = 44$; early-middle adolescent dyads = tenth graders with younger siblings, $n = 39$; middle-late adolescent dyads = twelfth graders with younger siblings, $n = 18$); however, the dyads were relatively equally divided across the four possible sex compositions: sister-sister dyads ($n = 39$), brother-brother dyads ($n = 22$), sister-brother ($n = 19$), and brother-sister ($n = 27$). First-born siblings were between 12–18 years of age ($M = 14.76$, $SD = 1.67$), and second-

born siblings were between 9–17 years of age (M = 11.96, SD = 1.89). The reported ethnicities of most families within the study were European American (91.7 %), with other families indicating African-American (5.6 %) or other ethnicities (2.8 %). Median family income ranged between $70, 000 and $84, 000 (13.2%), and 72.3 percent of the parents had at least a college degree.

Families who dropped out from Time 1 to Time 2 showed no differences in ethnicity, marital status, income, or main study variables from those families who participated at both time points. However, those families who did not continue their participation did differ in maternal education and were less educated from those who did continue, t = 51.79, p =.00. Thus, maternal education was controlled for in all primary analyses.

We found that both positive and negative reports of both older and younger sibling relationship quality at Time 2 had 10% data missing. We then used Little's MCAR to determine if our data was missing at random. Little's MCAR test found that our data was missing at random ($\chi 2$= 60.16, df=50, p=.357). We then conducted expectation maximization (EM) to account for missing data from participant cases by adding estimated values based on the data. The researchers performed 25 iterations of the expectation maximization that included all main study variables of the remaining 101 participants of the study. Additionally, a multiple imputation with 5 iterations was performed to fill in missing data based on the presence of missing values at random.

Procedure

Letters were mailed to the families of eighth-, tenth-, or twelfth-grade students in the primary school district of a Midwestern city consisting of approximately 120,000

people. Families who met the inclusion criteria (i.e., adolescents must be the first-born children in their families and have a second eldest sibling who was fewer than 5 years younger) were asked to contact researchers via phone or email. Participating siblings came to the laboratory with at least one parent for a 2-hour visit. Prior to the start of the family visit, participants were paid honoraria for their participation. As part of a larger study, family members gave consent and assent, completed questionnaires, answered questions in a one-on-one interview with a trained investigator, and participated in two, sibling video recorded interactions: a conflict-resolution task and a family vacation-planning task. In order to keep the research activities from becoming too arduous for participants, tasks were divided such that a third of the questionnaires were completed, then the interview or one of the discussion tasks was completed, and this process was repeated two more times with the order of the questionnaires remaining the same for all participants, with the interviews and conflict-resolution discussion task being counterbalanced.

The present study, specifically, examined the conflict-resolution discussion task and several of the questionnaire measures assessing relationship quality. During the conflict discussion task, dyads were instructed to spend approximately 3 minutes selecting an issue of common conflict between them, and then spend an additional 5 minutes debating the issue with one another and working toward a resolution. If they completed the discussion of one issue, they were instructed to discuss more issues until time was complete. In actual practice, however, most of the siblings began discussing each issue in-depth as they came up, and very few worked all the way toward the

resolution of an issue. Thus, all 8 minutes of the conflict-resolution task were coded for the quality of conflict communication as described below.

At Time 2 (one year later), participants were again contacted by research recruiters through letters and phone calls. Participants in Time 2 were only required to complete questionnaires in their own home and not complete discussion tasks or interviews. First-borns who had graduated high school and no longer lived at home were sent questionnaires separately (n = 19). Families were sent questionnaires via e-mail (unless paper versions were requested). Families returned questionnaires at their earliest convenience and were paid an honorarium for their continued participation. In all analyses, only mothers were considered as the parent of interest because the vast majority (72%) of participating parents who attended the Time 1 in-lab assessment were mothers.

Measures

Marital and sibling relationship quality. The Network of Relationships Inventory is a subjective, 33-item measure that assesses both martial and sibling relationship quality. Mothers and siblings indicated the quality of their relationship with their corresponding spouse/sibling on a scale of 1 (little to none) to 5 (the most). The measure was created by Furman and Buhrmester (1985) and factor analyzed by Adams and Laursen (2007) and contains up to 13, 3-item subscales that are most typically combined into three broader categories: positivity/support, negativity, and relative power. In the present study, we only examined positive and negative relationship qualities, and not relative power, due to the primary study goals. For the positivity/support factor, 24 items within the eight positive subscales were examined: admiration (‘How much does your spouse/brother/sister treat you like you’re admired and respected?’), affection

‘(How much does your spouse/brother/sister like or love you?’), instrumental aid (‘How much does your spouse/brother/sister teach you how to do things that you don’t know?’), intimacy (‘How often do you tell your spouse/brother/sister things that you don’t want others to know?’), nurturance (‘How much do you help your spouse/brother/sister with things she/he can’t do by her/himself?’), reliable alliance (‘How sure are you that this relationship will last in spite of fights?’), intimate disclosure (‘How often do you share secrets and private feelings with this person?’), and support (‘How much do you turn to this person for support with personal problems?’). For the negativity factor, 9 items across 3 subscales were examined: conflict (‘How often do you and your spouse/brother/sister disagree and quarrel with each other?’), antagonism (‘How much do you and your spouse/brother/sister get on each other’s nerves?’) and criticism (‘How often does this person point out your faults or put you down?’).

Both positive and negative items, respectively, were computed into composite scores (the average of all the items) for marital and sibling relationship quality. Cronbach's alphas for the present study at Time 1 evidenced high reliability for both sibling and marital perceptions of relationship quality (support/positivity = .96 for marital, .95 for older siblings, .94 for younger siblings; negativity = .95 for marital, .93 for older siblings, .95 for younger siblings). Time 2 also revealed high reliability with support/positivity equal to .94 for older and .95 for younger siblings, and negativity equal to .95 for older siblings and .97 for younger siblings.

Observed constructive/destructive conflict communication. As previously examined by Campione-Barr et al. (2014), sibling conflict-resolution interactions were coded using an adapted form of the Global Coding System (Smetana, Abernethy, &

Harris, 2000) for the purposes of examining sibling relationships rather than parent-child relationships. In the original coding system, 18 codes were used to cover communication, interaction, affective tone, and relational behaviors where older and younger siblings were rated separately. As not all of the 18 original codes were intended to assess conflict styles (many assessed aspects of separateness, individuation, and independence), only nine codes from the original coding system were utilized in the present study. Six of the nine codes used in the present study assessed constructive conflict including warmth, providing explanations for positions, involvement in the task, attempts at conflict resolution, receptive statements, and requesting input from the other sibling.

The remaining three codes assessed destructive conflict, which included tolerating differences and disagreements, anger, and heated conflict within the dyad (reverse coded). Trained coders coded observed sibling interaction on a 5-point scale from 1 (almost never) to 5 (almost always) and rated observations twice, (rating the older sibling first and the younger sibling second). As previously examined by Campione-Barr et al. (2014), the present study utilized the composite scores for warmth, comfort level during interaction, supportiveness, listens to the other sibling, and attempts conflict resolution for observed constructive conflict ($\alpha = .81$), and the ratings of anger, heated conflict within dyads (a dyadic-level code), and tolerating differences and disagreements (which was reverse scored) to create the scale for destructive conflict between siblings ($\alpha = .75$). Inter-rater reliability was calculated over 25 percent of the interactions, and intra-class correlations ranged from .80 to 1.0 across all codes.

Analytical Plan

Hierarchical linear regression was used to assess the hypothesized associations between marital and sibling relationship quality, as well as conflict communication as a moderating variable between marital and sibling relationship quality. Each regression model contained three steps (with sibling relationship quality—positive or negative—as the dependent variables). The independent variable (marital relationship quality) and the moderator (conflict communication) were centered (participant scores for a given variable were subtracted from the average of the sample of that same variable). In the first step of each model, maternal ethnicity and education and the target (older or younger) sibling age, sex, and Time1 sibling relationship quality were entered as control variables. Main effects of the independent variable marital relationship quality (positive or negative) and the moderator variable of observed sibling conflict communication (constructive or destructive) were entered in the second step. The interaction between the independent variable and moderator variable were analyzed in the third step. In order to test hypotheses, as visually expressed in **Figure 1**, a total of 16 models were separately examined the association between Time 1 marital relationship quality on Time 2 older and younger siblings' reports of sibling relationship quality at Time 2, as moderated by conflict communication: as regressed on Positive – Positive X constructive; Positive-Positive X destructive; Negative-Negative X constructive; Negative-Negative X destructive Positive-Negative X constructive; Positive-Negative X destructive; Negative-Positive X constructive; Negative-Positive X destructive.

Data checking procedures and analyses were conducted to ensure assumptions of normality were met. Normality analyses checks, including linearity, homogeneity of variance, and independence of errors were conducted for both older and younger siblings.

These were indexed by histogram plots, Q-Q plots, residual scatter plots, and by box-and-whisker plots. Appendix A contains the normality plots for positive and negative relationship quality of older siblings (since older siblings had significant outcomes) as well as plots for the moderating variable of constructive and destructive conflict communication. All of the variables checked for normality were met except for destructive conflict communication. Despite not meeting normality assumptions, we performed no transformations on destructive conflict communication variable due to the characteristics relative health of the sample that as a majority, displayed low levels of destructive conflict.

Results

Descriptive Statistics

As shown in Table 1, siblings' constructive and destructive conflict scores were negatively correlated with each other, but not at a significant level. Both older siblings' reports of positive relationship quality and older siblings' reports of negative relationship quality from Time I to Time II were significantly correlated with each other, demonstrating longitudinal consistency. Mothers' reports of positive marital relationship quality were significantly and, expectedly, negatively correlated with mothers' reports of negative marital relationship quality. Additionally, within rater associations between positive relationship quality and negative relationship quality ranged from non-significant to very low, yet significant associations indicating that positive relationship quality and negative relationship quality are not simply opposite ends of the same relationship spectrum for siblings. Both older and younger sibling reports of negative relationship quality at Time 1, but only older sibling reports of negative relationship quality at Time

II, were significantly and negatively correlated with age of both older and younger siblings, suggesting only older siblings are reporting fewer negative feelings about their relationship quality as they grow older. Furthermore, age of older siblings was positively related to greater constructive conflict.

Positive Marital Relationship and Positive Sibling Relationship Quality

The first set of analyses investigated the association between positive marital relationship quality and positive sibling relationship quality (see Table 2). For the association between maternal positivity and older siblings' perceptions of sibling positivity, moderated by constructive sibling conflict, no significant main effect of marital relationship quality was found. There was a significant main effect of constructive conflict communication, suggesting that when constructive conflict communication is high, it is associated with greater positive sibling quality one year later. Furthermore, a significant positive marital quality by constructive sibling conflict interaction was found. Despite the significant interaction, however, neither simple slope was significant, and thus, not interpreted (see Figure 2). For the analysis investigating these same effects, but from the younger siblings' perspective, no significant main effects or interactions were evident.

Next we investigated the moderating role of destructive sibling conflict on the same associations. For older siblings' perspectives of positive sibling relationship quality, and similar to above, no significant main effects of marital relationship were found. However, there was a marginally significant main effect of the moderating variable of observed destructive conflict, such that higher levels of observed destructive sibling conflict were associated with lower levels of sibling relationship positivity one year later

(see Table 2). There were no significant interaction effects. For the analysis investigating younger siblings' perceptions of relationship positivity, there were no significant main effects or interactions.

Positive Marital Relationship and Negative Sibling Relationship Quality

The next series of analyses investigated the impact of positive marital relationship quality on negative sibling relationship quality (see Table 3). For the association between marital positivity and older siblings' perceptions of sibling negativity moderated by constructive sibling conflict, no significant main effects or interactions were evident. For the analysis investigating younger siblings' perceptions of relationship negativity, there were no significant main effects or interactions.

Next we investigated the moderating role of destructive sibling conflict. For older siblings, and again, similar to the above analysis, no significant main effect of positive marital quality was found. There was, however, a significant positive marital quality by destructive sibling conflict interaction evident. Simple slopes analyses suggest that when destructive conflict was low, greater marital positivity was significantly associated with greater sibling negativity reported by older siblings one year later, $t = -2.00$, $p = .04$. However, there was no association between martial and sibling when destructive was high (see Figure 3). For the analysis of younger siblings' perceptions of sibling relationship negativity, similar to above investigating younger siblings' perceptions of relationship negativity, there were no significant main effects or interactions.

Negative Marital Relationship Quality and Positive Sibling Relationship Quality

Next, the moderating roles of constructive and destructive sibling conflict on the association between negative marital relationship quality and positive sibling relationship

quality were investigated (see Table 4). For older siblings, no significant main effect of negative marital relationship quality was found. However, a significant main effect of constructive conflict communication was found, such that higher constructive conflict was associated with higher positive sibling relationship quality one year later. Although there was no main effect of negative marital relationship quality, there was a significant negative marital quality X constructive sibling conflict interaction. Simple slopes analyses suggested that when constructive conflict communication was low, the greater martial negativity, the less positivity older siblings reported one year later, $t = -3.95$, $p = .00$. However, there was no significant association between marital negativity and sibling positivity one year later (see Figure 4). For younger siblings, there was only a significant main effect of constructive conflict communication, such that higher constructive conflict was associated with higher positive sibling relationship quality one year later.

We next investigated the moderating role of destructive siblings' conflict in the same associations. For both older and younger siblings, no significant main effects or interactions were evident.

Negative Marital Relationship and Negative Sibling Relationship Quality

Finally, we investigated the impact of negative marital relationship quality on negative sibling relationship quality and the potential moderation by constructive and destructive sibling conflict for both older and younger siblings (see Table 5). For both older and younger siblings, no significant main effects or interactions were evident.

Discussion

The present study examined the role of observed sibling conflict communication in the association between marital relationship quality and sibling relationship quality

over one year's time. First, the present study examined the direct associations between marital relationship quality and sibling relationship quality to elucidate the possibility of a spillover or compensation effect. Secondly, we examined whether the association between martial and sibling relationship qualities would be stronger or weaker in the contexts of constructive or destructive sibling conflict communication.

Spillover vs Compensation

Spillover has been defined as one highly influential relationship impacting another in the context of the family (Marvin & Stewart, 1990). The present study investigated whether marital relationship quality affected sibling relationship quality for evidence of said spillover. Conversely, compensation is the individual(s) actively altering an outcome that is different from the expected outcome given an influential source (Bronfenbrenner & Morris, 2006). In the case of the present study, we examined this occurrence among family relationships, specifically, how siblings decide to better their own sibling relationship quality in light of the influence of a negative marital relationship.

The present study did not find support for the spillover hypothesis. The findings show that regardless of relationship positivity or negativity, the strength of parents as models for their children and the importance of maintaining marital harmony for sibling relationship development did not 'spillover' into the sibling relationship. Interestingly, previous research has typically found more spillover of negativity than positivity (e.g., Stocker & Youngblade, 1999); however, most of those previous studies investigated high-conflict families or already divorced families. The lack of association between marital relationship qualities predicting sibling relationship qualities may be due to

methodological reasons. Instead of analyzing relationship qualities separately, examining both positive and negative relationship qualities simultaneously may yield different results and reflect a more holistic indicator of both marital and sibling relationship quality. The rationale for assessing both positive and negative qualities of a relationship simultaneously is that they that naturally co-exist within the same relationship and to only focus on one type provides an incomplete picture of a relationship. Of particular concern is that negative relationship qualities might hamper and reduce the effectiveness of positive relationship qualities in a natural setting. This rationale is supported by the Gottman ratio (1994) that assumes negative interactions in a relationship are stronger than positive ones and that more positivity is required to offset negativity (i.e., ten positive experiences are required to off-set one negative experience in a healthy relationship). Our study consisted of relatively stable, non-highly conflictive households, thus the negativity between parents is likely lower in this study than those samples previously examined and may not have enough negativity to 'spillover'.

Our study did not find evidence for compensation, at least not when constructive and destructive sibling conflict communication were examined as potential contexts for compensation. Although sibling conflict communication did influence the association between marital and sibling relationship quality, it did not go in the predicted direction in terms of high constructive conflict serving as a protective factor and high destructive conflict serving as a harmful factor. Specifically, we found that when constructive conflict communication was low, more marital negativity was associated with less positive sibling relationship quality, rather than finding this same association in the high constructive conflict communication condition (Collins & Steinberg 2006). While this

association makes sense, we did not find evidence that in the context of high constructive conflict communication, the association between more marital negativity was associated with more positive sibling relationship quality as we had predicted based on the compensation hypothesis.

Research by McHale and colleagues illuminates that the characteristics of each child in the family influence and impact family dynamics and parenting (McHale, Updegraff, Jackson-Newsom, Tucker, & Crouter, 2000). The McHale et al. (2002) study provides empirical evidence and support for the notion that siblings can possibly negate the impact that negative marital relationships have on them because they influence family dynamics. In addition to siblings being autonomous units, the composition and the make-up of the family unit is important to its process and interactions. Our study consisted primarily of two-parent households. However, nationally, this is not a good representation of families. Given a more diverse sample of families and their composition categorized by sub-family types (two-parent, single-parent, separated, divorced, step-families, etc…), we could possibly expect different results about the association between marital and sibling relationship quality. Spillover and compensation effects may present themselves differently across different family sub types due to the different family interactions each family has.

Constructive and Destructive sibling Conflict Communication

While sibling conflict communication did not influence the associations between martial and sibling relationship qualities in the predicted directions, sibling conflict communication was consistently associated with later sibling relationship quality. Specifically, higher constructive conflict communication was associated with more

positive sibling relationship quality. This demonstrates that when siblings handle their conflicts constructively, it can benefit the quality of their relationship over time.

In addition to siblings being able to influence their own relationships, siblings are able to learn how to do this from other individuals outside the household. The ability of siblings during adolescence to learn from relationships with friends and romantic partners outside the home is salient. Siblings learn from others by seeing how their friends and romantic partners handle conflict or how they themselves handle conflict in the context of these relationships (Smetana, Campione-Barr, & Metzger, 2006). Further, siblings can learn from their friends' and romantic partners' how to communicate about conflict and incorporate these strategies into their own families.

Thus, the way that siblings communicate within their relationship can have long-term implications for the quality of their relationship. Given the importance of the sibling relationships in adulthood, when dealing with aging parents or in late adulthood when many other supportive relationships are gone (e.g., Ngangana, Davis, Burns, McGee, & Montgomery, 2016), it is important for siblings to understand how to appropriately handle their inevitable disagreements in order to maintain a high quality relationship. It will be important for future research in this area to identify under what conditions some sibling pairs are able to do so, while others are not in order to identify important intervention points.

Older Siblings v. Younger Siblings

Interestingly, in the present study, we did not find evidence of an association between marital relationship quality for older siblings' perceptions of the relationship one year later. Despite not finding an association between marital and sibling relationship

quality, our findings were only significant concerning older sibling interactions and simple slopes analysis. This pattern of findings suggests that older siblings may be more directly impacted by their parents' marital relationship quality than are their younger siblings. Resource dilution theory (Hertwig, Davis, & Sulloway, 2002) notes that parents are able to invest more time and resources into their first-born child than any other child in the family due to the fact that, for at least some period of time, they are an only child (McHale, Kim, & Whiteman, 2006). Therefore, parents may be more likely to directly socialize first-born children, while younger siblings may be more likely to be socialized by older siblings (Social Learning Theory, Bandura, 1977).

Limitations and Future Directions

Despite the strengths of the present study, including the multi-method, multi-informant, and longitudinal design, limitations still exist. Key among them is that the sample was overwhelmingly White and middle class. Literature shows that parenting, for example, is different across cultures (Bornstein, 2012; Domènech Rodriguez, Donovick, & Crowley, 2009; Spera, 2005). Research by Updegraff and colleagues highlights that sibling relationships in Mexican-American families tend to be intimate and conflictive (Updegraff, McHale, Whiteman, Thayer, & Delgado, 2005). Driven by familism values, Mexican-American sibling relationships can be more important than sibling relationships in other cultures. Therefore, it can be hypothesized that if the marital relationship quality is poor, compensation may be more likely to occur in this particular family. Second, only mothers' data about their perceptions of their marital relationship quality were utilized in the present study. It is important to note that both members of the marital relationship are integral parts of the dyad. Unfortunately, we had father data for less than 50% of the

sample, so utilizing mother-only perceptions was the most parsimonious way to investigate the associations of interest. Another limitation is that the present study only, and purposively, examined at intact families. The rationale for examining intact families was that previous research focused mostly on divorced couples. However, by testing these hypotheses in a married-only sample, a contribution was added to the field. The purpose of looking at a married-only sample was to see if spillover or compensation effects can occur in a stable family dynamic. Understanding family dynamics from a stable sample can help researchers identify areas where problems may arise. For example, it may be that compensation effects will be more pronounced in non-intact families (for example, divorced) as a way to offset and compensate for the negativity in the marital relationship. Lastly, the present study only examined sibling conflict communication as having a potential influence on the association between marital and sibling relationship qualities. Future research should identify more global aspects of family dynamics, including parent-child conflict communication or even peer relations outside of the home as further influences.

Overall, the present study provides valuable information since it examines an area of research that is not clearly supported by research. Examining sibling conflict communication, although not a strong influence concerning the association between marital and sibling relationship quality in relatively stable households, was an exploratory first step. Using the same methodological approach with a sample that has more marital conflict (e.g. divorce), sibling conflict communication may significantly contribute to the association between marital and sibling relationship quality. Although the present study

did not find substantial evidence for spillover or compensation, it did highlight the importance of older siblings since the data supported older sibling results.

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Table 1.

Correlation table of main study variables

Variable	Study 1 *M* (*SD*)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Con Comp	3.25 (.58)	--	-.17	-.00	.10	.09	.20*	.07	-.09	-.13	-.13	.08	.04	.09	.28**	-.00	.20	-.03
2. Des Comp	1.11 (.28)	-.17	--	-.07	.21*	.05	-.10	.00	-.02	.23*	.12	.04	-.00	.09	-.10	.15	-.04	.07
3. Mom-Pos	3.52 (.86)	-.00	-.07	--	-.55**	.11	.04	.18	-.10	-.12	-.14	-.04	-.22	.06	.08	-.02	.14	-.13
4. Mom-Neg	1.98 (.66)	.10	.21*	-.55**	--	.00	-.00	-.04	.06	.16	.12	.12	.04	-.09	-.15	.03	-.14	.20*
5. O-Pos I	3.20 (.73)	.09	.05	.11	.00	--	.70**	.59**	-.10	-.05	.04	-.09	.02	.23*	-.06	.09	-.03	.02
6. O-Pos II	3.03 (.75)	.20*	-.10	.04	-.00	.70**	--	.49**	-.04	.01	.07	.05	.10	.13	-.05	.18	-.10	.19*
7. Y-Pos I	3.30 (.77)	.07	.00	.18	-.04	.59**	.49**	--	.04	.00	.12	-.20	.02	.16	.01	.18	-.01	-.03
8. Y-Pos II	3.07 (.87)	-.09	-.02	-.10	.06	-.10	-.04	.04	--	.20*	.24*	.04	.07	.04	-.00	.19	-.12	-.13
9. O-Neg I	2.70 (.80)	-.13	.23*	-.12	.16	-.05	.00	.00	.20*	--	.65**	.40**	.00	-.10	-.35**	.11	-.31**	-.03
10. O-Neg II	2.62 (.91)	-.13	.12	-.14	.12	.04	.07	.12	.24*	.65**	--	.37**	.01	.05	-.40**	.21*	-.42**	.02
11. Y-Neg I	2.85 (.94)	.08	.04	-.04	.12	-.09	.05	-.19	.04	.40**	.37**	--	.02	-.07	-.29**	.09	-.29**	-.09
12. Y-Neg II	2.86 (1.04)	.04	-.00	-.22	.04	.02	.09	.03	.07	.00	.01	.02	--	-.01	-.11	-.05	-.09	-.10
13. T Sex	1.59 (.49)	.09	.09	.06	-.09	.23*	.13	.16	.04	-.10	.05	-.07	-.01	--	-.07	.09	-.09	-.11
14. T Age	14.76 (1.67)	.28**	-.10	.08	-.15	-.06	-.05	.00	-.00	-.35**	-.40**	-.29**	-.11*	-.07	--	-.23*	.80**	-.03
15. S Sex	1.51 (.50)	-.00	.15	-.02	.03	.09	.17	.19	.19	.11	.21*	.09	-.05	.09	-.23*	--	-.09	-.07
16. S Age	11.96 (1.89)	.20	-.04	.14	-.14	-.03	-.10	-.01	-.12	-.31**	-.42**	-.29**	-.09	-.09	.80**	-.09	--	-.13
17. M Edu	4.10 (.80)	-.03	.07	-.13	.20*	.02	.19	-.03	-.13	-.03	.02	-.09	-.10	-.11	-.03	-.07	-.13	--

Note. *significance at the .05 level, ** significance at the .01 level
Y=Younger Sibling; O= Older Sibling; Con=Constructive; Des=Destructive; Pos=Positive; Neg=Negative; II= Time 2; Sex coded: 1=M, 2=F

Table 2

Impact of Positive Mother's Relationship Quality on Siblings' Perception of Positive Sibling Relationship Quality

	Constructive & Older Positivity			Constructive & Younger Positivity			Destructive & Older Positivity			Destructive & Younger Positivity		
	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
Step 1	**29.28****	.58		**6.96****	.28		**29.28****	.58		**6.96****	.28	
Age			.02			**-.23****			.06			-.10*
Sex			-.06			.16			-.04			**.13**
T1 Sib Relate			**.72****			.45			**.73****			**.46****
Mother Ed			**.23****			.13			**.22****			.15
Step 2	1.83	.02		2.40*	.05		1.52	.02		.38	.01	
Martial Relate			.01			-.02			-.01			-.03
Conflict			**.16***			.22			-.12*			.10
Step 3	4.12	**.02****		.40	.00		.12	.00		.08	.00	
Marital x Conflict			**-.14****			.07			.03			.03

Note. *p<.10. *p<.05 **p<.01. Sex = sibling sex. All β's represent the final step of the analysis

Abbreviations of Variables Listed: T1 Sib Relate = Time 1 Sibling Relationship Quality; Marital Relate = Marital Relationship Quality; Conflict = Constructive/Destructive Conflict Communication; Marital x Conflict = Marital Relationship Quality interaction with Constructive/Destructive Conflict Communication

Table 3

Impact of Positive Mother's Relationship Quality on Siblings' Perception of Negative Sibling Relationship Quality

	Constructive & Older Negativity			Constructive & Younger Negativity			Destructive & Older Negativity			Destructive & Younger Negativity		
	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
Step 1	**29.96****	.59		**12.82****	.42		**29.96****	.46		**12.82****	.42	
Age			-.15+			-.07			-.15+			-.06
Sex			.06			.01			.05			.04
T1 Sib Relate			**.68****			**.62****			**.72****			**.62****
Mother Ed			.01			.15			.03			.13
Step 2	.46	.01		.91	.02		.52	.01		.49	.01	
Martial Relate			-.06			.10			-.02			.08
Conflict			-.05			-.09			-.06			-.01
Step 3	1.29	.01		.38	.03		**5.25****	.03		.29	.00	
Marital x Conflict			.08			-.18+			**-.17****			.05

Note. +p<.10. *p<.05 **p<.01. Sex = sibling sex. All β's represent the final step of the analysis

Abbreviations of Variables Listed: T1 Sib Relate = Time 1 Sibling Relationship Quality; Marital Relate = Marital Relationship Quality; Conflict = Constructive/Destructive Conflict Communication; Marital x Conflict = Marital Relationship Quality interaction with Constructive/Destructive Conflict Communication

Table 4
Impact of Negative Mother's Relationship Quality on Siblings' Perception of Positive Sibling Relationship Quality

	Constructive & Older Positivity			Constructive & Younger Positivity			Destructive & Older Positivity			Destructive & Younger Positivity		
	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
Step 1	**29.28****	.58		**6.96****	.28		**29.28****	.58		**6.96****	.28	
Age			.02			**.26***			.06			-.20+
Sex			-.09			.17			-.05			.14
T1 Sib Relate			**.70****			**.46****			**.72****			**.46****
Mother Ed			**.24****			.14			**.23****			.15
Step 2	2.85+	.03		2.66+	.05		1.70	.02		.56	.01	
Martial Relate			-11			.08			-.04			.06
Conflict			**.20****			**.23***			-.01			.10
Step 3	**4.80****	.02		.05	.00		**.13****	.00		.14	.00	
Marital x Conflict			.16**			-.02			-.03			.04

Note. +p<.10. *p<.05 **p<.01. Sex = sibling sex. All β's represent the final step of the analysis
Abbreviations of Variables Listed: T1 Sib Relate = Time 1 Sibling Relationship Quality; Marital Relate = Marital Relationship Quality; Conflict = Constructive/Destructive Conflict Communication; Marital x Conflict = Marital Relationship Quality interaction with Constructive/Destructive Conflict Communication

Table 5

Impact of Negative Mother's Relationship Quality on Siblings' Perception of Negative Sibling Relationship Quality

	Constructive & Older Negativity			Constructive & Younger Negativity			Destructive & Older Negativity			Destructive & Younger Negativity		
	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β	ΔF	ΔR^2	β
Step 1	**29.96****	.59		**12.82****	.42		**29.96****	.59		**12.82****	. 42	
Age			-.15+			-.02			**-.16****			-.03
Sex			.06			.00			.06			.01
T1 Sib Relate			**.69****			**.62****			**.70****			**.63****
Mother Ed			.03			.12			.04			.12
Step 2	.14	.00		1.87	.03		.16	.00		1.34	.02	
Martial Relate			-.01			.10			-.02			-.14
Conflict			.04			-.09			-.06			-.03
Step 3	.00	.00		.19	.00		.24	.00		.78	.01	
Marital x Conflict			.00			.04			.04			-.09

Note. +p<.10. *p<.05 **p<.01. Sex = sibling sex. All β's represent the final step of the analysis

Abbreviations of Variables Listed: T1 Sib Relate = Time 1 Sibling Relationship Quality; Marital Relate = Marital Relationship Quality; Conflict = Constructive/Destructive Conflict Communication; Marital x Conflict = Marital Relationship Quality interaction with Constructive/Destructive Conflict Communication

Figure 1

Conceptual Model

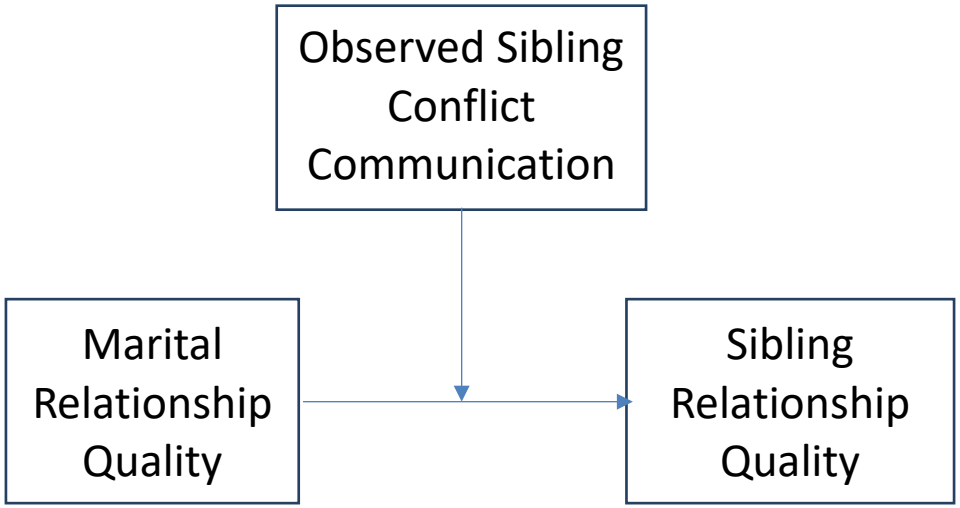
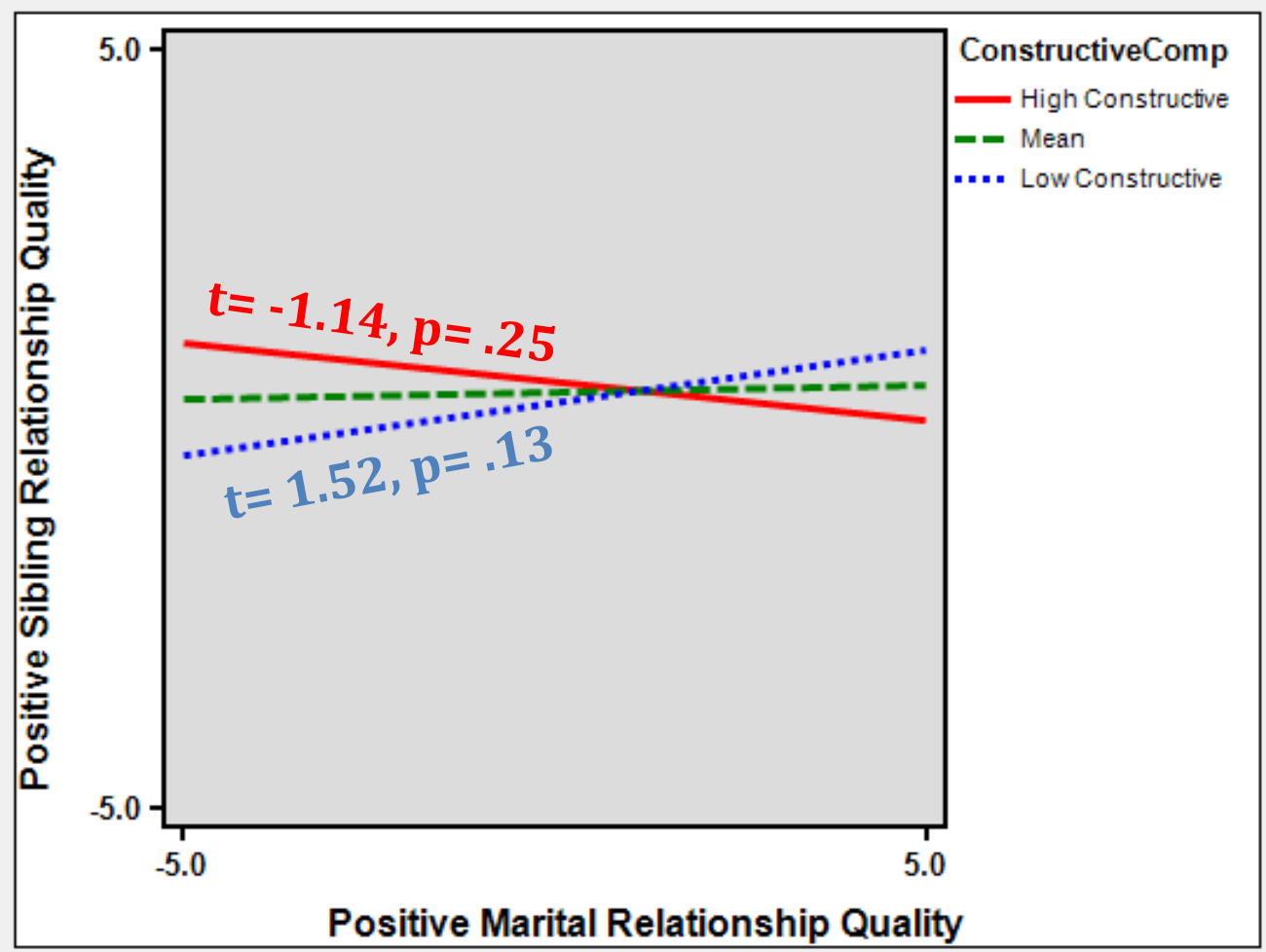


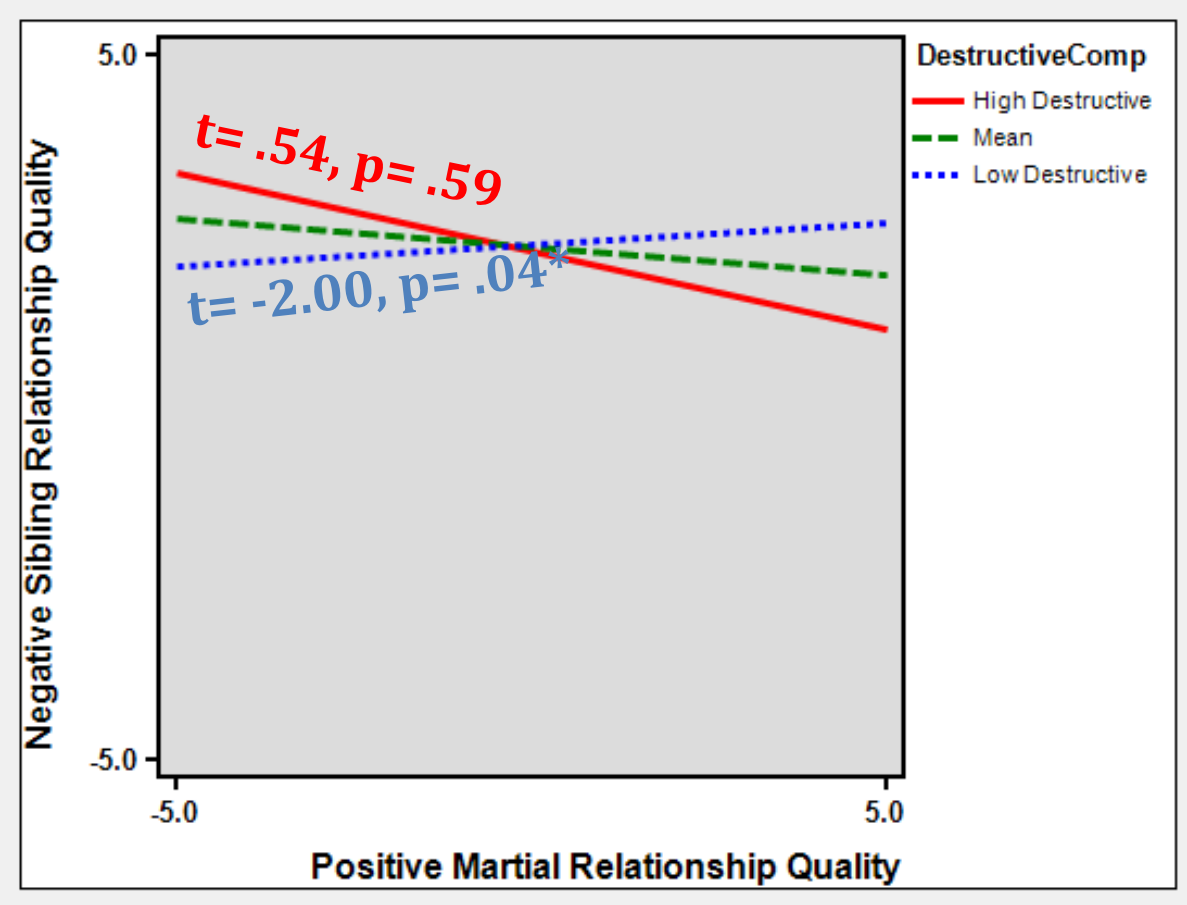
Figure 1: Conceptual Model of Marital relationship quality, sibling communication, and sibling relationship quality

Figure 2. Positive Marital Relationship Quality and Positive Sibling Relationship Quality



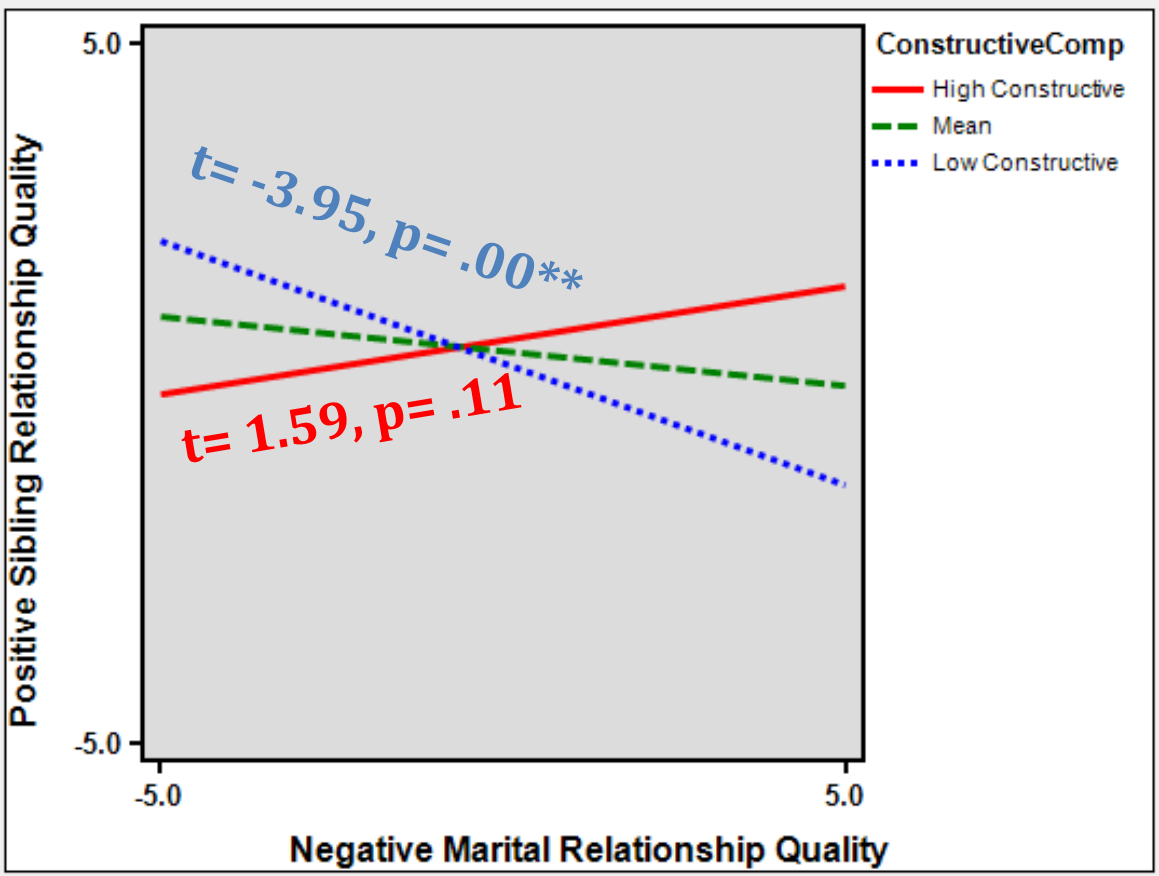
Note. + p<.10. *p<.05 **p<.01

Figure 3. Positive Marital Relationship Quality and Negative Sibling Relationship Quality



Note. $^{+}$ p<.10. *p<.05 **p<.01

Figure 4. Negative Marital Relationship Quality and Positive Sibling Relationship Quality

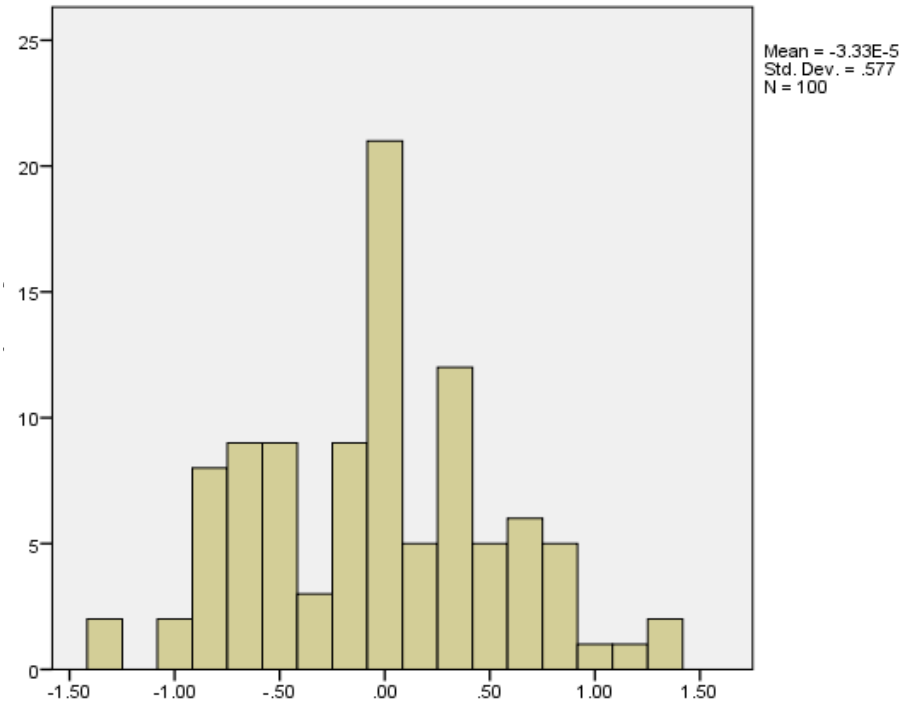


Note. + p<.10. *p<.05 **p<.0

APPENDIX

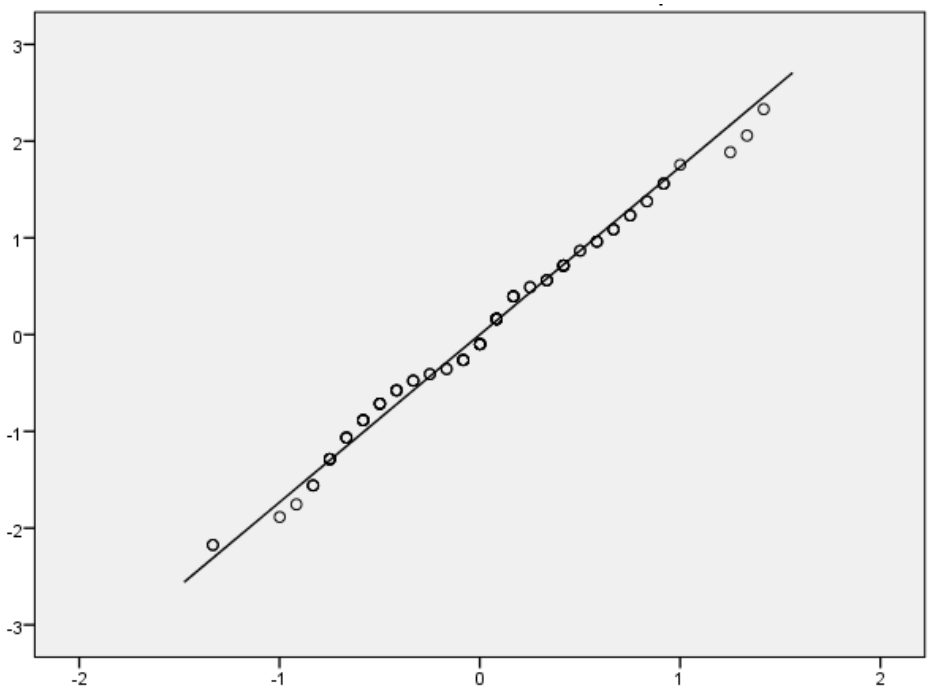
Appendix A

Normality Histogram Plot of Constructive Conflict Communication



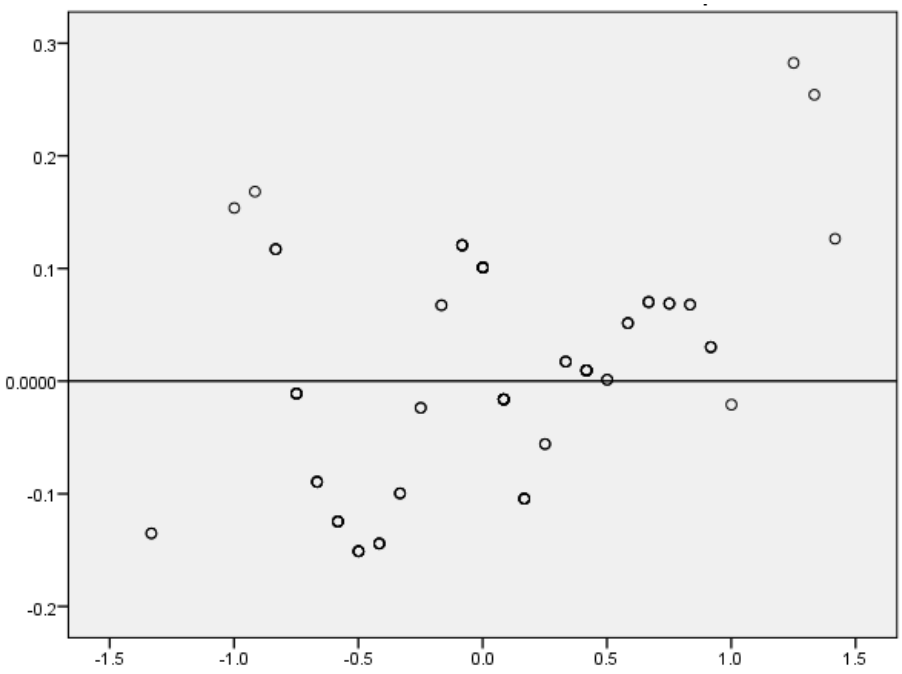
Appendix B

Normality Q-Q Plot of Constructive Conflict Communication



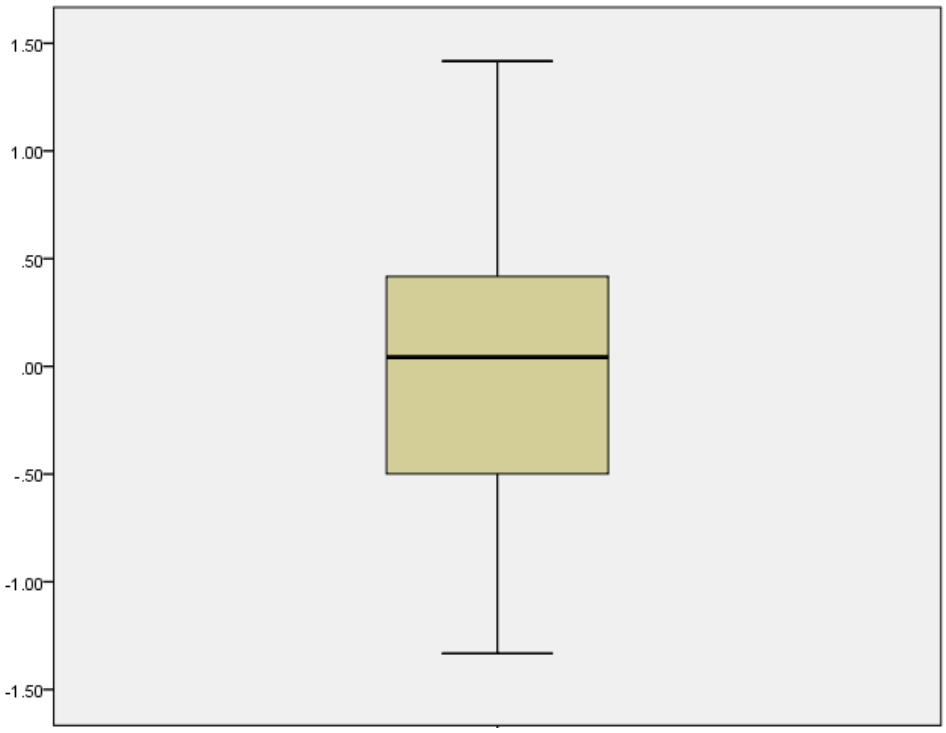
Appendix C

Normality Residual Plot of Constructive Conflict Communication



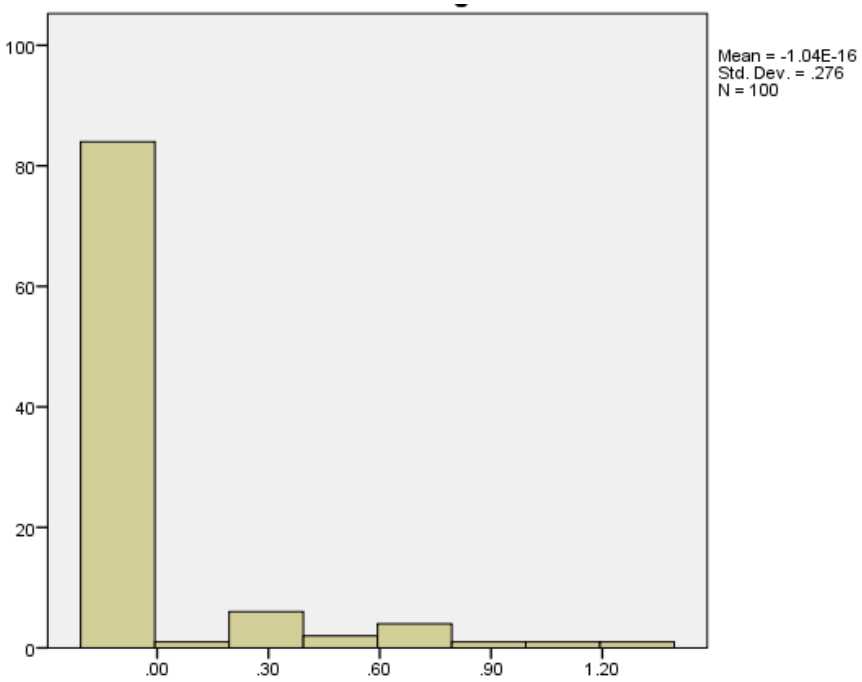
Appendix D

Normality Box Plot of Constructive Conflict Communication



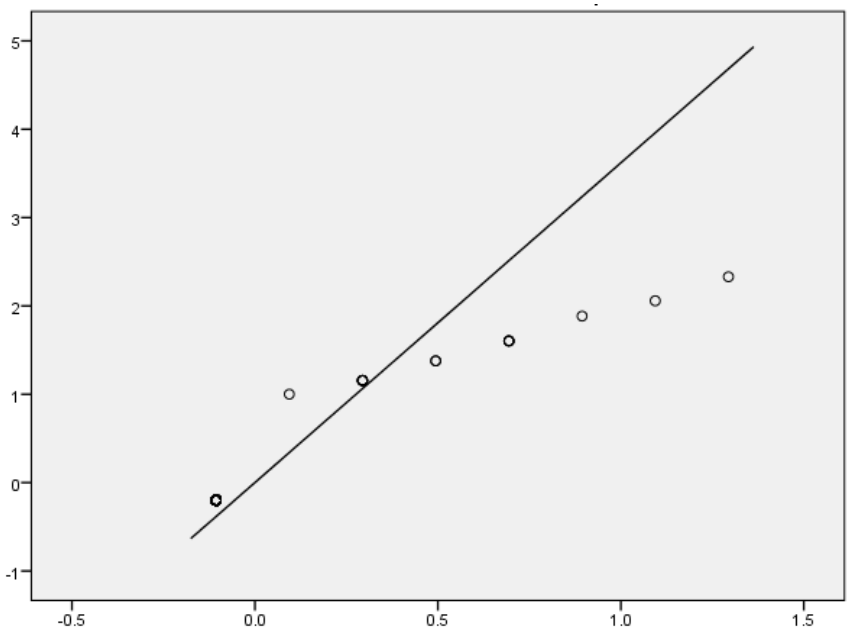
Appendix E

Normality Histogram Plot of Destructive Conflict Communication



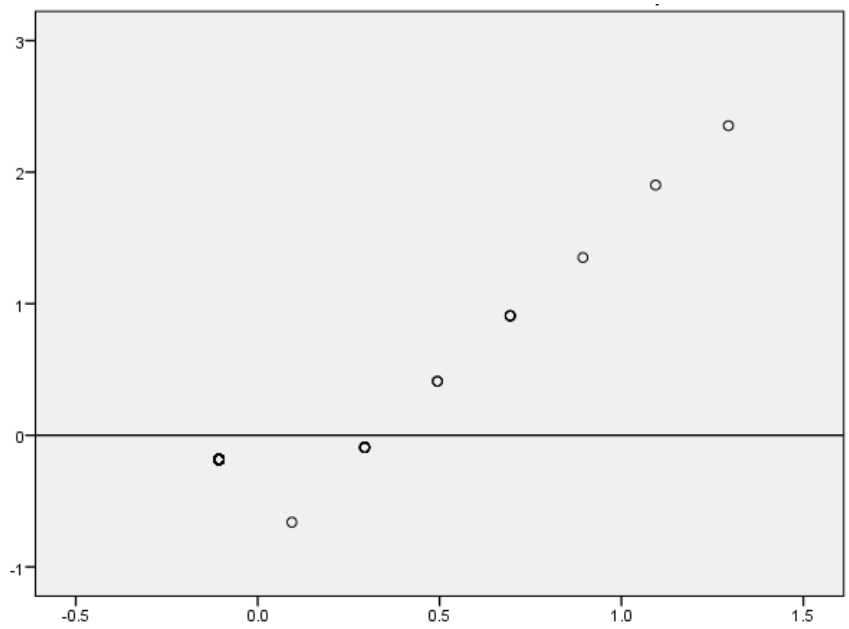
Appendix F

Normality Q-Q Plot of Destructive Conflict Communication



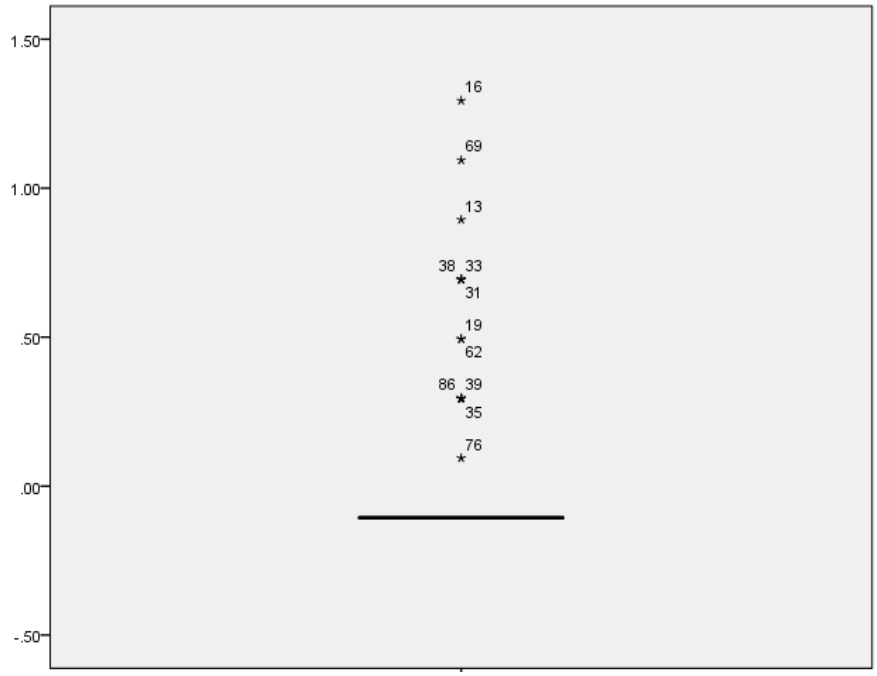
Appendix G

Normality Residual Plot of Destructive Conflict Communication



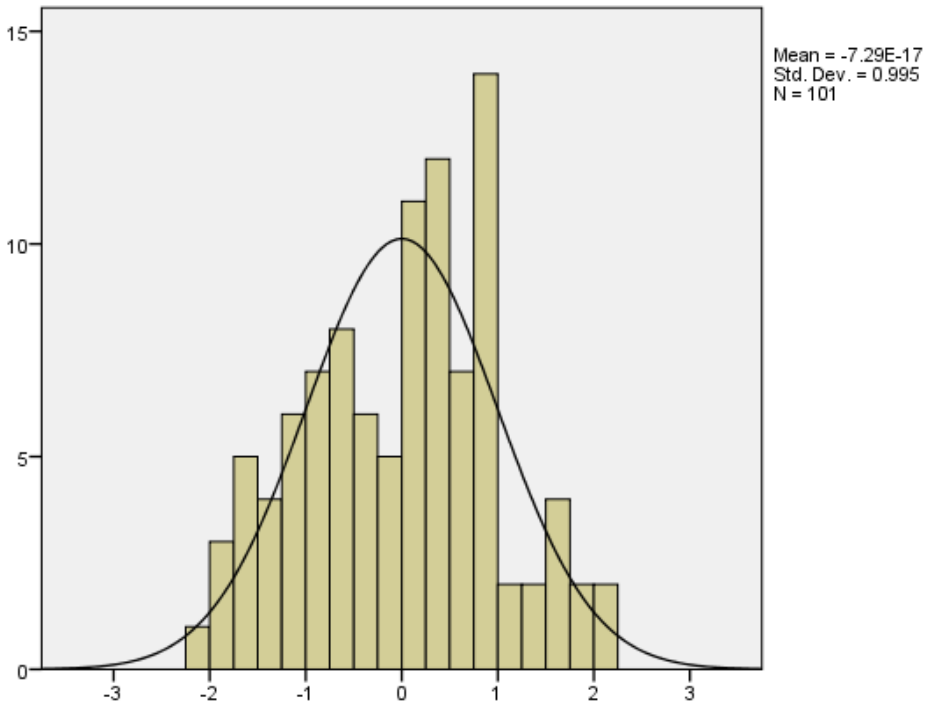
Appendix H

Normality Box-Plot of Destructive Conflict Communication



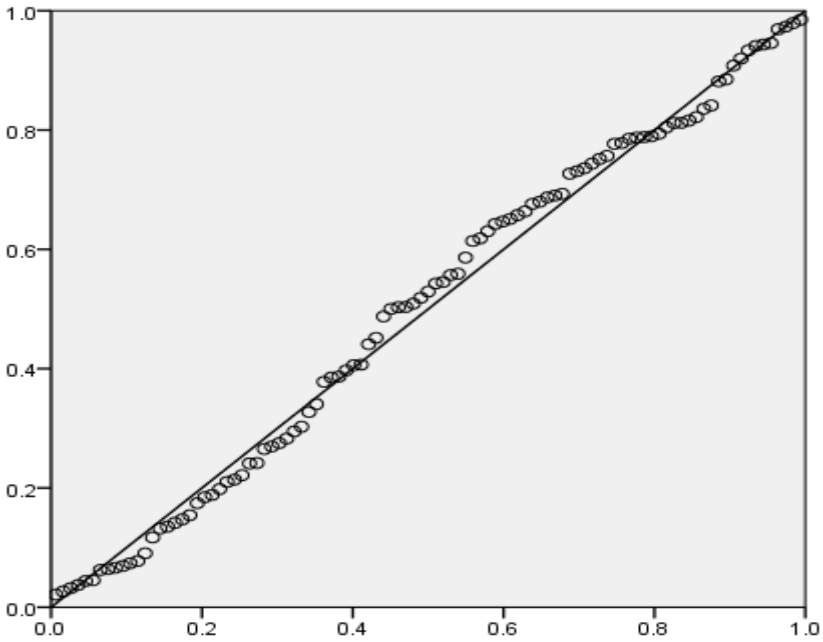
Appendix I

Normality Histogram Plot of Older Positive Relationship Quality



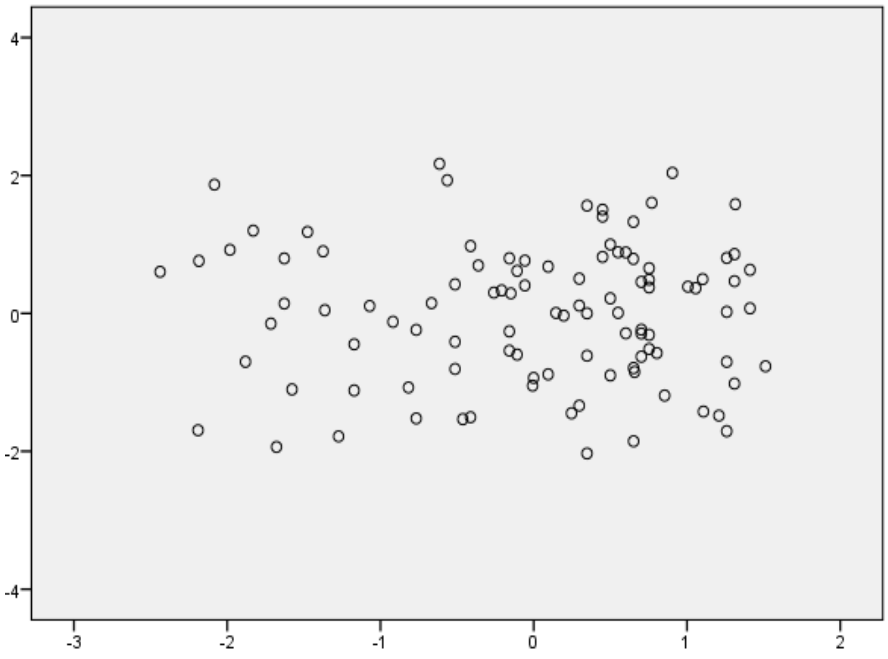
Appendix J

Normality Q-Q Plot of Older Positive Relationship Quality



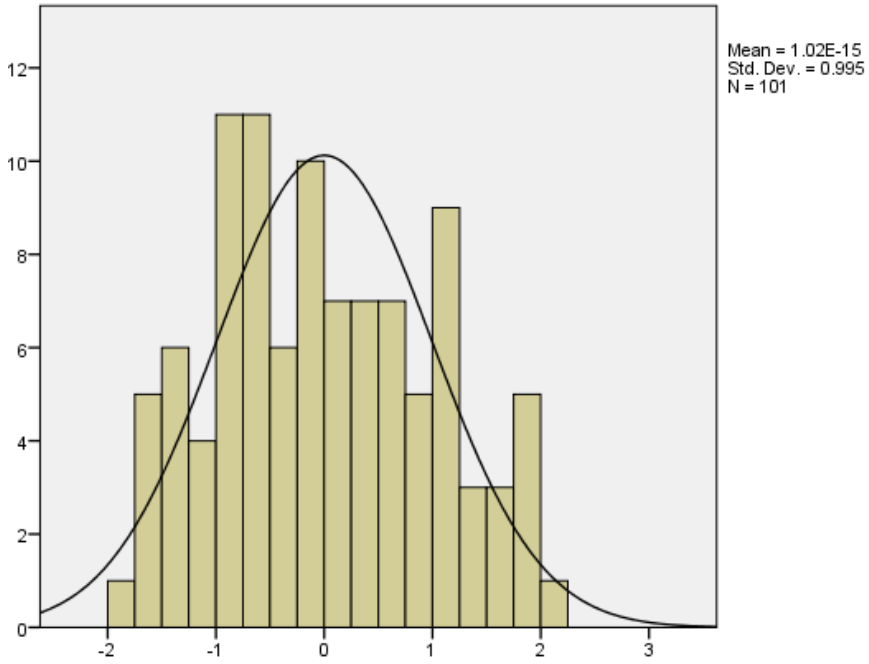
Appendix K

Normality Scatter Plot of Older Positive Relationship Quality



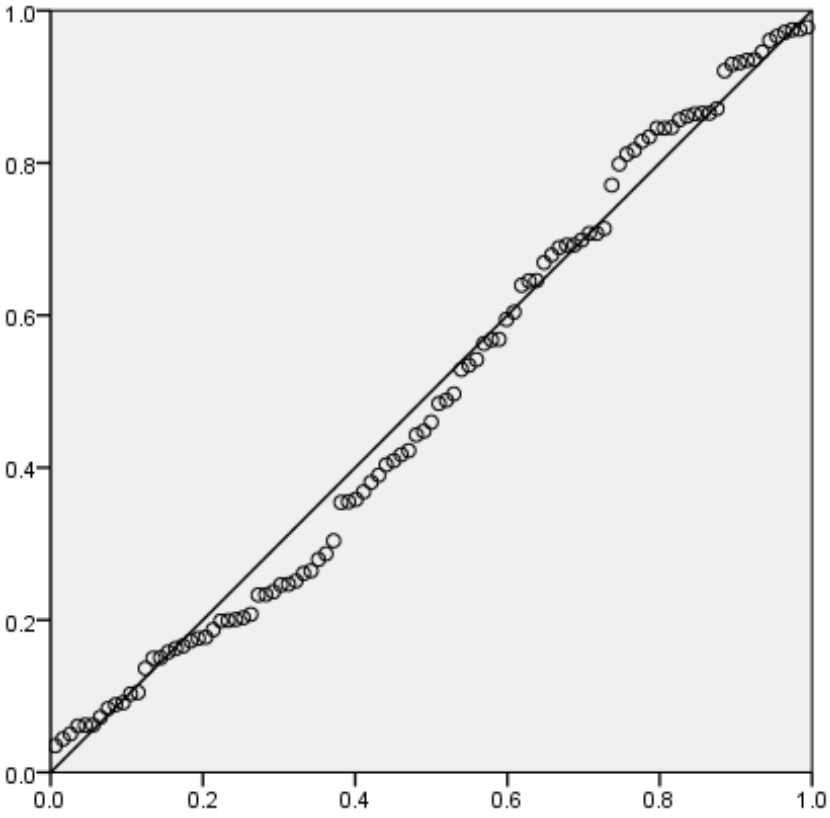
Appendix L

Normality Histogram Plot of Older Negative Relationship Quality



Appendix M

Normality Histogram Plot of Older Negative Relationship Quality



Appendix N

Normality Scatter Plot of Older Negative Relationship Quality