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SOCIAL SUPPORT EFFECTIVENESS: INTERPERSONAL COMPLEMENTARITY AND MEDIATING FACTORS IN FRIENDS' CONVERSATIONS

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Abstract

Social Support Effectiveness:

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This exploratory study examined how young adult friends' complementarity on the interpersonal traits of Dominance (i.e., difference) and Warmth (i.e., similarity) was associated with enacting distinct support styles and the evaluation of that support's effectiveness. Using a novel, naturalistic design that allowed friends to record themselves in everyday settings, 62 participants (69% female) recruited two close, same-sex friends to discuss interpersonal problems they were having with other people. Over two weeks at home, participants audio-recorded and evaluated two 10-minute conversations with each friend. In total, nearly 250 ten-minute conversations were examined in the present study. Researchers coded the support in the conversation transcripts as Problem-focused or Emotion-focused. Using hierarchical polynomial regression and surface modeling, friends' complementary Dominance was associated in a nonlinear saddle configuration with higher evaluations of the helpfulness of the support; this relationship was fully mediated by friends' enacting more Problem-focused support. Complementary Warmth was not associated with support effectiveness or enacted support style. Implications for young adult friendships are discussed, as well as recommendations for studying interpersonal theory more dynamically and proximally.

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Social Support Effectiveness:

Interpersonal Complementarity and Mediating Factors in Friends' Conversations

Young adults encounter a wide array of hardships that provide significant developmental challenges and opportunities (Arnett, 2000; Collins & van Dulmen, 2006; Vollrath, 2000). In a nationally representative study in the United States, young adults reported experiencing nearly four psychologically unhealthy days in a month, the highest rate found in all adult age groups (Centers for Disease Control & Prevention, 2011). Furthermore, young adults' psychological difficulties appear to be on the rise. According to the annual American Freshman Survey (Eagan et al., 2014), first-year college students in 2014 reported the lowest emotional health in over twenty years. Based on these trends, there is a strong need to understand how natural support systems can better help young adults cope with daily stressors.

Fortunately, research on the social contexts of coping is thriving (Lakey & Orehek 2011; Mikulincer & Shaver, 2009; Thoits, 2011). Empirical findings suggest that the type of social support offered, such as instrumental help or emotional reassurance, and the evaluation of that support noticeably differ with respect to the kind of relationship and the quality of the relationship in which it occurs (Canevello & Crocker, 2011). For young adults in the U.S., who tend to be living away from home and for whom romantic relationships are in flux, close friends have been found to serve an especially central role in providing support (Bokhorst, Sumter, & Westenberg; 2009; Wilcox, Winn, & Fiyvie-Gauld, 2005).

The more we understand particular sources of social support for young adults, the more it becomes important to understand the processes that connect the sources. One issue that has recently attracted the field's attention concerns the fit between the person who has the problem, or help Seeker, and the person providing the support, or Helper (Bodenmann, 2005). Young adults have been found to report a match between their help seeking styles and their help offering styles. For example, Chow and Buhrmester (2011) classified seeking and helping styles within an attachment framework. One of their main findings was that Seekers who expressed an overwhelmed coping style, such as excessively ruminating, tended to have Helper friends who offered overinvolved styles of support, such as being controlling and enmeshed (see also Chow, Buhrmester, & Tan, 2014). To date, however, most research on fit in social support has relied on self-report survey data. Unfortunately, surveys often fail to capture how people actually respond to each other's potentially distinctive ways of seeking and offering support.

In an effort to move beyond the more static designs used in past research, the current study considers whether the success or failure of social support might depend on the dynamic interaction of friends' dispositional tendencies. Friends are an important source of social support for young adults, especially for those who attend college (Wilcox et al., 2005), and young adults tend to turn to peers for help with day-to-day problems significantly more than family (Wilcox & Birkel, 1983). Although personality traits tend to be moderately stable throughout adulthood, longitudinal studies suggest that traits are more malleable in early adulthood than later on (Roberts,

Walton, & Viechtbauer, 2006; Vaidya, Gray, Haig, Mroczek, & Watson, 2008). Furthermore, changes in young adult friendships have been connected to personality changes in a reciprocal manner in longitudinal studies; for example, more emotionally stable young adults tend to choose friends that they are more secure with, and over time those secure relationships tend to make the young adults even more emotionally stable (Neyer & Lehnart, 2008). With respect to social support, in comparison to preadolescents and adolescents, young adult friends have been found to offer a broader range of verbal help behaviors, such as giving advice, distracting each other, validating excuses, and uplifting friends' emotions (Denton & Zarbatany, 1996). This diversification in offering help is likely due to gains in affect regulation and cognitive abilities (Steinberg, 2005). Young adulthood, therefore, occupies a unique developmental nexus between personality stability, flexibility, and maturing support capacities. The combination of heightened peer reliance, developmental maturity, and personality flexibility suggests that young adult friends should be uniquely positioned to make use of their interactions to achieve good social support fit.

How Personality Fit Contributes to Understanding Social Support

Personality fit in dyadic relationships has been described most extensively in Leary's (1957) Interpersonal Circumplex Model (see also Kiesler, 1983; Wiggins, 1979). According to this model, people use social relationships to gain status and love. The attempt to achieve status can be represented by a vertical dimension of agency, control, or dominance, while the attempt to achieve love can be represented by a horizontal dimension of communion, nurturance, or warmth. Mapping interpersonal

dispositions over these two axes creates a circular taxonomy of personality based on how strong or weak a person's behavior is on both dimensions (see Figure 1). For example, with respect to the socially oriented traits of the Five Factor Model of personality, extraversion is a mix of high Dominance and high Warmth, and agreeableness is a mix of low Dominance and high Warmth (McCrae & Costa, 1989).

Interpersonal theory (IPT; Carson, 1969) suggests that good fit in social support should come from friends interacting in a complementary fashion with respect to Dominance and Warmth. According to IPT, opposites theoretically attract for the dimension of control; for example, dominant behavior in close relationships invites submission and vice versa. In contrast, similarities are expected to mutually attract for the dimension of Warmth; that is, nurturance invites nurturance and likewise for criticism. A large number of studies have provided support for personality complementarity occurring throughout dyadic interactions between strangers (Markey, Funder, & Ozer, 2003; Sadler, Ethier, Gunn, Duong, & Woody, 2009). Moreover, people in relationships characterized by complementarity report being closer to each other, show signs of being more physiologically relaxed, and accomplish more on assigned tasks than people in relationships that are not complementary (for review, see Sadler, Either, & Woody, 2010). Interpersonal complementarity between Seekers and Helpers should, therefore, produce more effective social support interactions.

The interpersonal dimensions of Dominance and Warmth closely reflect the two core functions of support behaviors: boosting Seekers' esteem and helping

Seekers feel cared for (Cassel, 1976; Cobb, 1976). Helpers can try to make their friends feel empowered and loved in numerous ways; advice and empathy occupy the traditional foundation of such support behavior (Thoits, 1986). Because personality interactions might moderate how support is offered and evaluated it is important to acknowledge that many different types of behaviors might serve in the role of support.

To date, Barbee and Cunningham's (1995) Interactive Coping Communication Behavior System (ICCBS) is one of the more nuanced classifications of support. It includes both stereotypically helpful behaviors, such as advice and empathy, and stereotypically unhelpful behaviors, such as criticizing the Seeker. The ICCBS accomplishes this by integrating two traditions of conceptualizing coping and support: Problem-focused versus Emotion-focused support (Folkman & Lazarus, 1980) and Approach versus Avoidance support (Roth & Cohen, 1986). The terms Problem-focused and Emotion-focused refer to the goal of the support. Problem-focused support is an attempt to influence the source of the stressor by giving advice or resources, whereas Emotion-focused support aims to reduce negative affect by offering reassurance or empathy. The terms Approach and Avoidance refer to the orientation of the support. Approach support entails encouraging the Seeker to confront the stressor or related emotions; it often involves the aforementioned expressions of advice and empathy. Other examples of Approach support include expressions of curiosity, attentiveness, and personal responsibility (Ruth & Cohen, 1986). Avoidance support entails encouraging the Seeker to escape or dismiss the threat and related emotions; it often involves minimizing the problem or criticizing

aspects related to the problem, including the Seeker. Other examples of Avoidance support include expressions of distraction, procrastination, inattention, and denial of reality (Ruth & Cohen, 1986). In a study that examined both friends and romantic couples, Barbee (1990) found that Helpers were more likely to become annoyed and offer Avoidant support, such as minimizing the problem or criticizing the Seeker, when they perceived the Seeker's problem was controllable, unimportant, or not particularly unpleasant. Moreover, Helpers who were in a negative mood when asked for help also tended to provide more Avoidant oriented support, whereas Helper's who were in a more positive mood tended to provide more Approach oriented support, such as offering advice or empathy.

With respect to enhancing the esteem of a Seeker, Trobst (2000) has theorized that Dominance is associated with offering Problem-focused support in ways that are consistent with both Approach and Avoidance orientations. Indeed, research shows that dominant-extraverted Helpers tend to provide relatively high levels of Problem-focused Approach support (Watson & Hubbard, 2006), and such support has been linked to increasing the productivity of Seekers (Strutton & Lumpkin, 1996). Helpers high on Dominance conceivably take control by approaching the problem and offering novel perspectives or resources (e.g., "The problem can be fixed!"), which in turn helps Seekers gain power over the problem. Submissive Helpers might avoid offering their perspective or minimize the importance of the problem (e.g., "Just walk away!"), thereby reinforcing the agency of Seekers.

With respect to making the Seeker feel cared for, Trobst (2000) has theorized that Warmth is associated with offering Emotion-focused support in wasy that are consistent with both Approach and Avoidance orientations. Emotion-focused Approach support and pro-social behavior, such as empathy, has been empirically associated with Helpers who express warm traits, including agreeableness and disclosure (Clark & Reis, 1988; Zellars & Perrewé, 2001; Graziano, Habashi, Sheese, & Tobin, 2007). Moreover, Emotion-focused Approach support tends to enhance mutual intimacy in close friendships (Nolen-Hoeksema & Davis, 1999). For example, Rose (2002) has found that women who co-ruminate bond more closely by sharing, empathizing, and reassuring each other's shared problems. Helpers high on Warmth conceivably approach their friends' emotional problems in a pro-social manner by providing reassurance and empathy. Supporting the Seeker without putting down other people involved in the problem would reflect the "win-win" compromise approach to conflict management that has been strongly associated with the agreeableness component of Warmth; in contrast, disagreeable Coldness has been associated with verbally insulting others in response to interpersonal conflict (Jensen-Campbell & Graziano, 2001; Robinson, 2004). Consequently, cold Helpers might emotionally align with their friends by blaming other people for the problem. Another possibility is that cold Helpers might try to escape or avoid their friends' problems by criticizing the friend. This could be helpful if the criticism inspires Seekers to change their approach to an enduring problem.

According to interpersonal theory, the traits of Seekers and Helpers intermingle with each other. Therefore, the effectiveness of Helpers' enacted support may be best understood in relationship with their Seekers' interpersonal styles. Although Problem-focused support is often evaluated positively, studies have found that some Seekers interpret advice negatively as a Helper's attempt to take control, dominate, or invalidate (Dutton, 2012; Goldsmith & Flitch, 1997; MacGeorge, Feng, & Thompson, 2008; Smith & Goodnow, 1999). Likewise, criticism directed at Seekers is often evaluated negatively, but some participants have been found to rate criticism as potentially helpful, especially when the Seeker is perceived as responsible for the problem (Jones & Burleson, 1997). Notably, qualities negatively associated with Warmth, such as disagreeableness and anger, have been strongly linked to blaming others as a way to cope with interpersonal conflict (e.g., Meier & Robinson, 2004). Friends' fit or misfit with respect to Dominance and Warmth, therefore, might help to explain the evaluation of Problem-focused and Emotion-focused support. Seekers high on Dominance conceivably want Helpers to avoid giving their perspective and submit to the Seekers' perspective, whereas more submissive Seekers might want Helpers to approach taking control of solving the problem. Seekers high in Warmth conceivably want Helpers to reassure their perspective and express empathy. In contrast, more cold Seekers might evoke Helpers to be especially critical of them or others who are involved in the problem.

The distinctive feature of a complementary approach to social support is that it focuses on the interaction of how friends' traits influence each other, rather than the

individual effects of each friend's trait by itself. Few studies, however, have examined how dispositions interact in actual social support interactions. Consequently, the extent to which Helpers' support behaviors complement Seekers' needs with respect to Dominance and Warmth remains largely unknown.

Studying Personality Fit and Social Support More Dynamically

My review of the IPT and social support literatures suggests that combining three methodological paradigms could help untangle how Seekers and Helpers dynamically interact to produce effective support. The first involves collecting more naturalistic data, the second accounts for the possibility that personality and support might be related to each other in diverse nonlinear ways, and the third necessitates the use of a mediated model. These three improvements, which are described in more detail below, constitute key advances in the study of personality and social support.

The first methodological innovation concerns studying social support more naturally, as it occurs "in the wild." Much of the empirical support for personality complementarity comes from two types of studies: Surveys that ask participants to reflect on their tendencies based on prior experience or in hypothetical situations (e.g., Trobst, 2000), and observational studies that pair participants with strangers (e.g., Sadler & Woody, 2003). These studies produce data that are far removed from the emotional experience that occurs in face-to-face social support. Furthermore, social support typically occurs in the context of close enduring relationships, such as friends, family members, or significant others, where both individuals have had a long history of adapting to the other's habits (Goldsmith, 2004; Zimet, Dahlem, Zimet, & Farley,

1988). More observational studies are needed that focus on how people in preexisting relationships actually respond to each other's dispositions.

In contrast to studies that have tested IPT with surveys or with strangers, naturally occurring social support has been explored more proximally and creatively. For example, diary studies have been used that ask participants to reflect on their support activities at the end of each day (Shrout, Herman, & Bolger, 2006). In other experience-sampling studies, participants have carried Electronically Activated Recording devices to collect random recordings of their daily experiences (Mehl & Pennebaker, 2003). Researchers have also studied entire support conversations by inviting friends to talk with each other in controlled laboratory settings (Denton & Zarbatany, 2006). One way to combine and build upon these naturalistic methodologies would be to give participants audio-recorders so that they can capture their support conversations as they naturally occur. This integrative approach would enable the study of personality interactions between close friends in everyday settings.

A second methodological improvement is to study personality complementarity by examining diverse nonlinear effects. Researchers have studied complementarity in a host of ways, such as focusing on partners' trait difference scores, correlating partners' interpersonal style behaviors, and computing the geometric angle or length of partners' traits on the circumplex (see Gurtman & Balakrishnan, 1998). Although these approaches have certain strengths, they all compress personality fit into a single indicator. Typically, this fit statistic is then used to test direct linear relationships between complementarity and outcomes. Personality

fit, however, can occur during social support in many ways. For example, based on IPT, Warmth complementarity could entail the Seeker and Helper being equally high, low, or moderate on the trait, while Dominance complementarity could entail either the Seeker being high compared to the Helper, or vice versa. Because each of these types of complementarity could be associated with social support in similar or different ways, a more nuanced technique is needed to capture the dynamics of personality fit.

One potential analytic candidate for capturing such nuance is polynomial regression and surface modeling (Edwards, 2002; Shanock, Baran, Gentry, Pattison, & Heggestad, 2010). This technique has been increasingly used over the past decade to test aspects of organizational fit, such as the overlap between employee needs and opportunities for promotion, and employee retention (for review, see Kristof-Brown, Zimmerman, & Johnson, 2005). The same approach can be used to explore personality fit between friends and specific social support factors. In polynomial regression and surface modeling, personality agreement and personality disagreement are described separately. For example, perfect personality agreement between friends can occur along a line characterized by both friends being equally high, moderate, or low on the trait. Personality disagreement can also occur in numerous ways depending on whether the Seeker or Helper is high, moderate, or low on the trait. Using surface modeling, the relationship between (a) social support and the degree of personality agreement and (b) social support and the degree of personality disagreement are each characterized by a linear slope parameter and a quadratic

(curvature) slope parameter. Accordingly, four aspects of personality fit are tested. As a whole these individual parameters work in concert with one another to describe the three-dimensional relationship between social support and personality fit (for additional information, see Shanock et al., 2010). Polynomial regression avoids the many problems associated with analyzing partners' trait difference scores, most notably reliability concerns (Edwards, 2001). In addition, the polynomial regression model can be used to produce three-dimensional figures to visualize the relationship among the friends' traits and social support factors. These figures communicate understanding of complex relationships in a more descriptive manner than the abstract statistics of geometric fit found in much of the IPT literature.

The last methodological improvement is to incorporate a mediated model. A mediator variable helps explain a path from one variable to another (Baron & Kenny, 1986). Because personality complementarity often has been found to produce more objectively productive and subjectively enjoyable interactions (Sadler et al., 2010), personality fit should be associated with positive evaluations of support, as well as improved mood concerning the problem. Incorporating a mediator would allow identification of the behavioral process that connects the expected relationship between complementarity and support effectiveness. Indeed, findings from survey studies suggest that support behavior has an interpersonal circumplex structure (Trobst, 2000; Wiggins & Trobst, 1997). That is, Dominance is associated with the Approach and Avoidance dimensions of Problem-focused support. For example, someone high in Dominance may be inclined to offer advice (Approach support),

whereas someone low in Dominance might be inclined to minimize the problem (Avoidance support). Likewise, Warmth is associated with the Approach and Avoidance dimensions of Emotion-focused support. For example, someone high in Warmth may be inclined to offer empathy (Approach support), whereas someone low in Warmth might be inclined to criticize (Avoidance support). Figure 1 depicts this hypothesized connection between enacted support and the interpersonal traits. Naturalistic observational studies are needed to test whether there is a relationship between the interpersonal traits and enacted support in this expected manner, and if such support in turn is particularly effective.

The Present Study

The goal of this study was to explore how personality complementarity and enacted support are dynamically related to the perceived effectiveness of social support. A novel procedure was carefully designed to test these relationships in a naturalistic context. Conceivably, young adults share their problems with multiple confidants to find the best possible support for their problem, or in other words, to achieve "a good fit." Accordingly, help Seeker participants were asked to recruit two of their close friends as Helpers with whom they would talk about a problem. Seekers were given digital recorders so they could have their conversations in a more comfortable and ordinary setting than lab-based experiments of social support (e.g., Denton & Zarbatany, 1996; Pasch & Bradbury, 1998). The support that the two Helpers provided during the conversations could be compared to see how their distinct personalities differentially interacted with the Seeker's personality.

Seekers were also asked to talk with their Helpers on multiple occasions: two conversations with each Helper occurred over two weeks (i.e., four total). This was done in part because personality tends to predict aggregated measures of behavior over time better than a single event (Epstein, 1979; Todd, Tennen, Carney, Armeli, & Afflect, 2004). Collecting two conversations from each Helper also allowed Seekers to switch which friend they talked to first each week to avoid potential order effects.

In addition, Seekers were directed to only discuss interpersonal problems with their Helpers. Although people generally use both Problem-focused and Emotion-focused strategies to cope with any given problem, individuals have been found to use Problem-focused strategies significantly more when confronted with achievement concerns, such as work or school (Folkman & Lazarus, 1980; Horowitz et al., 2001). By focusing solely on interpersonal problems, which would seem to be both emotional and task-related, personality complementarity was expected to have a greater opportunity to influence what type of support was more often enacted and what type of support was more effective.

To isolate the unique effect of personality complementarity on support effectiveness, several variables were controlled that could potentially enhance support: closeness, wellbeing, and gender. Relationship closeness consistently has been found to be associated with more effective social support (Canevello & Crocker, 2011; Weiz & Wood, 2005). For example, Uno, Uchino, and Smith (2002) found that support offered in purely positive friendships reduced cardiovascular activity (i.e., biological anxiety) significantly more than support provided in emotionally

ambivalent friendships. With regard to wellbeing, its relationship with social support has been found to be complex; specifically, people who report higher levels of wellbeing tend to receive more social support, but they also tend to have larger social networks, perceive more available social support, and seek out support more effectively (Cohen & Wills, 1985; Sheier & Carver, 1992). Finally, although somewhat contested, research on the relationship between gender and social support suggests that women, compared to men, tend to provide more Emotion-focused support than Problem-focused support, and/or more support in general (e.g., Barbee et al., 1993; Goldsmith & Dun, 1997).

Another methodological consideration concerned how to measure the effectiveness of social support. Effective social support is multi-faceted, including how the Seeker perceives different aspects of the Helper's support, and the extent to which the Seeker feels better or worse about the problem after the conversation. These different measures of support effectiveness are not always in agreement. Many studies have found that Helpers' efforts at social support sometimes leave Seekers feeling worse, or that perceived support is sometimes more predictive of wellbeing than the raw frequency of actual, or enacted, support (for review, see Barrera, 1986). Furthermore, people can evaluate the same support differently with respect to its sensitivity or its helpfulness. Problem-focused support, such as advice, tends to be rated higher on instrumental helpfulness than on sensitivity (Goldsmith, McDermott, & Alexander, 2000). It is conceivable that Emotion-focused support would be similarly evaluated as higher on sensitivity than on instrumental helpfulness. To

explore the particular influence of personality complementarity on social support, Seekers were asked to separately evaluate the instrumental helpfulness (i.e., Utility) and the emotional reassurance-empathy (i.e., Sensitivity) of the support provided, as well as to report their negative affect concerning the problem before and after the conversation.

Based on the literature review above, the following three hypotheses were developed to describe the expected relationships among personality complementarity, enacted support, and the perceived effectiveness of social support (see Figure 2). Hypothesis 1 concerns evaluations of the usefulness of the support; Hypothesis 2 concerns the emotional effectiveness of the support; and Hypothesis 3 concerns negative affect.

> H1: (A) Friends' Dominance complementarity (i.e., two friends' increasing difference on Dominance) will predict Seekers evaluating the Utility of the conversation support higher. Figure 3 depicts this relationship. (B) Helper's Problem-focused support will fully mediate the relationship between Dominance complementarity and the Seeker's evaluation of Utility support.
>
> H2: (A) Friends' Warmth complementarity (i.e., two friends' increasing similarity on Warmth) will predict Seekers evaluating the Sensitivity of the conversation support higher. Figure 4 depicts this relationship. (B) Helper's Emotion-focused support will fully mediate

the relationship between Warmth complementarity and the Seeker's evaluation of Sensitivity support.

H3: (A) Friends' Dominance complementarity and Warmth complementarity will each predict Seekers reporting less Negative Affect after the conversation. (B) Problem-focused enacted support and Emotion-focused support will fully mediate these relationships, respectively.

To examine the hypotheses, hierarchical polynomial regression was used along with surface modeling to test both linear and nonlinear effects of personality complementarity on social support (Edwards, 2002). Exemplar conversations were then presented to highlight more proximally how friends appear to negotiate their personalities during social support interactions.

Method

Participants

A total of 112 students from two upper division psychology courses at a large public, Western, U.S. university were invited to participate as support Seekers as part of a class project. Each Seeker then recruited two close friends to participate as support Helpers. All Helpers were given $5 Amazon gift cards for agreeing to participate. Because the study served as a class project, allowances were made for students who could not carry out the study's procedure (e.g., chose family members or romantic members as Helpers, did not speak English in the conversations, talked over the phone instead of face-to-face, discussed topics unrelated to social support or

interpersonal problems, or did not give consent to have their data used for research). Consequently, 134 friendship pairs (67 Seekers and their two Helpers; 60% of the invited sample; 69% female) who accurately followed the procedure constituted the sample for the present study.

The sample averaged 21.06 years of age (*SD* = 1.39), and was moderately diverse in ethnicity/race (35% European American, 25% Latino/a, 15% Asian American, 21% Mixed) and socio-economic status (10% neither parent finished high school, 13% one or both parents finished high school degree, 14% one or both parents had some college education, 44% both parents finished 4-year college degree or more). Participants had been friends for at least 9 months (Median, Mode = 3 years; 67% of the pairs currently or had formerly lived together). Friends' age, ethnicity and social status tended to be similar to each other. There were no significant group differences between participants who were included versus excluded with respect to several key characteristics (i.e., gender: LR $\chi^2[1, N = 112] = 1.52$, $p = .218$, Cramer's V = .22; ethnicity: LR $\chi^2[5, N = 112] = 7.01$, $p = .220$, Cramer's V = .24; age: $t[109] = .34$, $p = .731$, $d = .06$; dominance trait: $t[110] = -1.07$, $p = .287$, $d = .20$; warmth trait: $t[110] = -.67$, $p = .500$, $d = .13$).

Procedure

The study unfolded over three phases: (1) Week One: Preliminary recruitment and instruction of participants, and participants' completion of an Entrance Survey to collect personality and relationship information, (2) Weeks Two and Three: Participants' completion of four support conversations and surveys to document the

effects of the conversations, (3) Week Four: Seekers' transcription of their recorded conversations. A fourth phase, not assessed in the current research, consisted of an Exit Survey that asked Seekers to reflect on conversation dynamics in the transcriptions. Below, the first three phases of the study are detailed.

Phase 1: Recruitment and Entrance Survey. Seekers were recruited in two upper division psychology courses as part of a class project that involved writing a paper about their experience participating in the study. Participants were told the study involved understanding how friends talk to each other in natural environments instead of controlled laboratory conditions. During a scheduled lecture period, the lead researcher provided Seekers with study materials (i.e., a digital recorder and conversation surveys), and instructed them on how to carry out the study's procedure. Seekers were asked to recruit two friends that met the following criteria: (1) a close friend the Seeker had known for a year or longer, who was (2) at least 18 years old, and similar in age and sex to the Seeker, (3) local and available to meet face-to-face to talk with the Seeker, and (4) a friend whose personality was similar to the Seeker and a friend whose personality was different than the Seeker. The last criterion was included to encourage diversity in the personality constitution of the friendships; Seekers were free to interpret personality similarity and difference however they wanted.

After Seekers provided the emails of themselves and their recruited Helpers to the lead researcher, all participants were emailed a 40-minute online Entrance Survey. The survey gathered information about demographics, personality, wellbeing, and

relationship characteristics. At the start of the survey, participants were asked to give consent to have their data used for research purposes; students could complete the project for class without giving consent, in which case their data was not used in the study (3% of recruited sample). To protect confidentiality, all participants and their data were associated with a unique eight-digit identification number.

Phase 2: Conversations. After completing the Entrance Survey, Seekers had two support conversations with each Helper over the course of two weeks for a total of four conversations. At the start of the project, Seekers were provided an envelope containing directions on how to carry out the study's conversation procedure, surveys to fill out before and after each conversation, and a digital recorder to audio-record their conversations. The conversation procedure was outlined to Seekers in the following way:

> "Friends often talk to each other about problems they have with others, such as a roommate, a romantic partner, a parent, a boss, or another friend. Over the next week, choose a problem you are having with another person you have regular contact with, someone other than the friends in the study with you. Talk with each friend separately about this problem for at least 10 minutes. With your friend's awareness and permission, record the conversation with the recorder provided to you. You can talk whenever and wherever you want. The goal is to talk together as naturally as possible, with two exceptions: (1) no one other

than you and your friend can be present during the conversation, and (2) avoid talking about any illegal activities."

Seekers audio-recorded themselves talking to each Helper, separately, about the same interpersonal problem during the first week of conversation collection. The following week, Seekers discussed another interpersonal problem (or an extension of the first problem) with each Helper.

Pre- and post-conversation surveys. All participants completed a short paper survey immediately before and after each conversation; Seekers were responsible for administering and collecting the surveys. The Pre-Conversation Survey asked participants to rate how they were feeling and how close they felt to their friend in that moment. The Seeker was also asked to briefly describe the problem to be discussed, and whom the problem involved. The Post-Conversation Survey asked Seekers to evaluate the support provided in the conversation and to rate how they felt about the problem again. Helpers were asked where and when the conversation took place. Both friends were asked to rate how typical the conversation was compared to how they normally talked to each other. Participants sealed their completed surveys in an envelope. Seekers gave the surveys to the lead researcher after each week of conversations to ensure timely completion.

Counterbalancing friends' conversations. The order in which participants talked to their friends was counterbalanced to help control for order effects in the conversations. That is, the first problem was discussed with Helper A first and then

Helper B, whereas the second problem was discussed with Helper B first and then Helper A.

Phase 3: Transcription. After collecting all four conversations, Seekers transcribed the first 10 minutes of their conversations by starting a new line whenever a new person spoke, indicating laughs with [laugh], and changing all proper names to pseudonyms. Seekers saved the transcripts on their recorders and gave the recorders to the lead researcher at the end of the study.

Debriefing. At the conclusion of data collection**,** the lead researcher presented an overview of the goals of the study and moderated a class discussion of the Seekers' experiences with the study.

Measures

Survey measures of central interest in the mediation analyses included the Dominance and Warmth of both friends, the Seeker's evaluation of Utility support and Sensitivity support, and the Seeker's Negative Affective post-conversation. Control measures used in the mediation analyses included Gender, Wellbeing, Closeness pre-conversation, and Negative Affect pre-conversation. Additional information was also collected to provide richer context of the participants and conversations.

Entrance survey measures. The following measures were collected online a week before the first conversation was held.

Personality. Dominance and Warmth were assessed with the Interpersonal Adjectives Scale Revised-Big Five (IASR-BF; Trapnell & Wiggins, 1990).

Participants rated their personality on 124 adjectives using an 8-point Likert scale (1 = an Extremely Inaccurate description, 8 = an Extremely Accurate description). The IASR-BF uses 64 of the items to measure the eight octants of the interpersonal circumplex defined by the dimensions of Dominance and Warmth (Octants: Assured-dominant [PA], Unassured-submissive [HI], Warm-agreeable [LM], Cold-hearted [DE], Arrogant-calculating [BC], Aloof-introverted [FG], Unassuming-ingenuous [JK], Gregarious-Extraverted [NO]). The structural integrity of the circumplex configuration of the IASR-BF has received strong support (Gurtman & Pincus, 2000). Participants' scores on the eight octants were standardized and used to compute the two (*z*-based) factors of Dominance and Warmth according to the population norms and equations set forth by Trapnell and Wiggins (1990):

$$\text{Dominance} = .03[(z\text{PA} - z\text{HI}) + .707(z\text{NO} + z\text{BC} - z\text{FG} - z\text{JK})]$$

$$\text{Warmth} = .03[(z\text{LM} - z\text{DE}) + .707(z\text{NO} - z\text{BC} - z\text{FG} + z\text{JK})]$$

Participants who scored above average on Dominance tended to rate themselves high on adjectives such as self-confident, persistent, and assertive, and low on items such as timid and unaggressive. Participants who scored above average on Warmth tended to rate themselves high on adjectives such as kind, sympathetic, and accommodating, and low on items such as ruthless and cruel.

Wellbeing. Wellbeing was assessed using the constructs of depression and life satisfaction. Depression was measured with the 11-item Center for Epidemiological Studies Depression Scale, IOWA Short Form (Kohout, Berkman, Evans, & Cornoni-Huntley; 1993). Participants rated how they felt during the past

week on a 5-point Likert scale (e.g., "Everything I did was an effort;" 1 = None of the Time, 5 = Most of the Time). The validity of the full length Center for Epidemiological Studies Depression Scale has been demonstrated with clinical ratings; expected associations with negative life events and other constructs have also been found (Radloff, 1977). According to Kohout et al. (1993), the IOWA Short Form measures very similar to the original.

Life satisfaction was assessed with the 5-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin; 1985). Participants rated the extent to which they agreed with the statements on a 5-point Likert scale (e.g., "I am satisfied with my life;" 1 = Disagree Strongly, 5 = Agree Strongly). Peer reports, clinical ratings, and affect memory tests have all demonstrated strong support for the validity of the SWLS (Pavot, Diener, Colvin, & Sandvik, 1991). The Wellbeing metric was computed by reverse scoring the depression items, and then averaging the Depression scale and SWLS scale scores.

Demographic information. Participants were also asked to provide their gender, ethnicity/race, and socio economic status (i.e., parents' education).

Conversation surveys. The following measures were collected immediately before and after each conversation took place.

Interpersonal problem. Before the conversation occurred, Seekers were asked to provide a short caption describing the interpersonal problem that they were going to talk about, whom the problem was about, and when the problem occurred.

They also rated how serious the problem was on a 7-point Likert scale (1 = Not at all Serious, 7 = Very Serious).

Friendship closeness. Before each conversation occurred, both friends independently rated their perceived Closeness to each other with the single-item Inclusion of Other in Self Scale (IOS; Aron & Aron, 1992). The IOS depicts seven pairs of increasingly overlapping circles that were labeled to represent the Seeker and Helper. More overlap in the circles indicated feeling closer. Aron and Aron (1992) have demonstrated that the IOS has strong validity with respect to predicting expected relationship behaviors, and acceptable convergent and discriminant validities when compared to similar measures. The two friends' ratings of the closeness of their relationship before each conversation were highly correlated with each other (ICC = .56, $p < .001$). Also, ratings from the first and second conversation were highly correlated with each other (ICC = .77, $p < .001$). Therefore, the Closeness metric was computed by averaging both friends' ratings across both conversations.

Negative affect. Both before and after each conversation, the Seekers rated the 5-item short version of the Negative Affect Scale (short NAS, Thompson, 2007). Specifically, Seekers rated how they felt about the interpersonal problem with respect to five negatively valenced adjectives (e.g., "Upset") on a 7-point Likert scale (1 = Not at All, 7 = Very Much). Convergent and criterion-related validities for the short NAS have been found to be acceptable (Thompson, 2007).

Evaluation of support. Seekers were asked to evaluate the Helper's support with the Evaluation of Enacted Support Scale (EES; Goldsmith et al., 2000). The EES

measures three factors of support: (1) Problem Solving Utility (e.g., "helpful or hurtful"), (2) Relational Assurance (e.g., "supportive or unsupportive"), and (3) Emotional Awareness (e.g., "sensitive or insensitive"). Seekers rated the support on each 4-item factor using a 7-point semantic differential scale (e.g., 1 = Very Unhelpful; 4 = Neither; 7 = Very Much Helpful). The EES has been validated in comparison to similar constructs (Goldsmith et al., 2000). Although the three factors are highly correlated (r = ~0.70) Goldsmith et al. (2000) found that people rated specific offerings of support on the three factors significantly differently; thus, the factors are strongly associated with each other but they are distinguishable. In particular, Utility support was associated more closely with evaluating advice support, and participants rated it more differently in comparison to the other two types of support. Consequently, the Relational Assurance and Emotional Awareness factors, which were highly correlated with each other in the current sample (r = .812, p < .001), were averaged to create a single Sensitivity evaluation metric. The Utility evaluation factor was used unaltered.

Setting of conversation. After the conversation occurred, Helpers were asked to describe where and when the conversation took place.

Typicality of conversation. After the conversation occurred, all participants were asked to report on a 7-point Likert scale how realistic the conversation was compared to how they normally talk to their friend (1 = Very Unrealistic, 7 = Very Realistic).

Coding Support Turns

Support turns in the conversations were coded by modifying Barbee and Cunningham's (1995) Interactive Coping Communication Behavior System (ICCBS). The ICCBS classifies support behavior by crossing Emotion-focused and Problem-focused support with Approach and Avoidance support. As a result, behavior can be coded according to four core support styles: (1) Problem-focused Approach: asking questions to clarify the problem and offering suggestions, perspectives, or tangible help, (2) Problem-focused Avoidance: minimizing the importance or scope of the problem, conveying a lack of interest or expertise in the problem, (3) Emotion-focused Approach: providing reassurance and empathy, and (4) Emotion-focused Avoidance: expressing criticism or irritation at the Seeker. Although the ICCBS describes verbal and nonverbal support, only the verbal codes were used because video was not collected. In addition, slight modifications were made to accommodate the types of support found in this corpus of conversations and to more closely align the support types with the dimensions of Dominance and Warmth. Notably, minimizing was emphasized in coding Problem-focused Avoidance and criticism was emphasized in coding Emotion-focused Avoidance as outlined above.

Several micro-codes clarified different ways the four types of support could be offered. For example, a Seeker might communicate her problem in the following way: "My roommate didn't want to get out of bed again this morning and I was like, 'Oh my god I'm going to kill you.' But I just told her I'd get breakfast started." The Helper might respond in a Problem-focused Approach style by saying any of the following types of things, "You should get her a louder alarm clock (suggestion); I

can come over and help you drag her out of bed (tangible help); Maybe she's really depressed about her mom being sick (perspective); What time does she usually go to bed? (question)." The Helper could respond in a Problem-focused Avoidance style by saying any of the following types of things, "I have no idea how you can do anything other than just let her be (ignorance); That's normal; most college students sleep in (minimize); Yeah well, did I tell you how I ran into Sarah last night? (disinterest)." To express an Emotion-focused Approach style, the Helper could respond with, "That sounds so irritating (empathy); She's so lazy (reassuring); You're such a sweetheart (compliment); How'd you feel after she ate the breakfast? (feelings query)." To express an Emotion-focused Avoidance style, the Helper might respond with, "You're just enabling her (criticism); You always complain about her instead of standing up for yourself (irritation); Woah, you made breakfast—you should get the Oscar for Nanny of the Year (sarcasm)." Table 1 provides additional examples of the micro-codes for each of the four types of support.

Support was coded in each conversation by the lead researcher and one of four trained assistants who was blind to the hypotheses and characteristics of the participants. The conversations were prepared for analysis by first identifying how much of the conversation was devoted to talking about the interpersonal problem. Several friends joked for the first few conversation turns before the Seeker described the problem. While many friends spoke about the problem for the rest of the conversation, some friends finished discussing the problem and moved on to another topic before the ten minutes were up. Consequently, coders identified the first turn

that began discussion of the Seeker's problem and the last turn that referenced the Seeker's problem. This became the social support section of the conversation that was coded.

Each Helper conversation turn, that is, when the Helper spoke, was coded within the social support section of the conversation. Turns were coded instead of individual utterances because turns highlight the interaction between friends; the turn best captures how the Helper most directly responds to what the Seeker most recently said. Laughs were not counted as conversation turns. Acknowledgement tokens, such as yeah and uh huh, are conceivably an important factor in communicating social support; however, their diverse potential meanings are ambiguous and difficult to discern (see Lambertz, 2011). Consequently, acknowledgement tokens were counted as turns but they were not coded as support for this analysis.

Coding categories were mutually exclusive. When Helpers enacted multiple types of support in a single spoken turn (<5% of turns), the first type of support provided was coded. In rare cases where a Helper's initial response could be coded for both core types of support, Problem-focused support trumped Emotion-focused support. This decision was made because Problem-focused support typically offered additional information or tangible help to the Seeker, whereas Emotion-focused help supported or reassured the Seeker's existing understanding of the problem. Although both types of support are important, the addition of something new to the Seeker was viewed as more significant to capture than the reinforcement of something that was already available to the Seeker.

After initial coding was complete, the four core types of support were further reduced to Problem-focused and Emotion-focused dimensions. Although Approach support is typically conceived of as helpful and caring and Avoidance support as unhelpful or hurtful, the current study hypothesized that both types of support might be equally constructive depending on the personality configurations of the friends. Therefore, to compute the Problem-focused metric, the micro-codes of the Approach type and the Avoidance type were summed. This score was then divided by the total number of Helper turns to help control for length of the conversation. For example, if a Helper generated 10 Approach turns and 5 Avoidance turns over the course of 30 Helper turns, the score would be computed as (10+5)/30, or 50%. Last, the scores from the Helper's two conversations were averaged. The Emotion-focused metric was calculated in a similar manner.

Reliability of Measures and Support Coding

Internal consistency of measures was assessed with Cronbach's alpha. Table 2 presents the details of the reliabilities for the core measures. The reliability of all measures was in the good range (.80; Cortina, 1993). Reliability for the single-item IOS scale used to assess friendship closeness before the conversation was calculated using the Seeker's and Helper's ratings for both of their conversations (i.e., four ratings of the friendship). In addition, the IOS scale has been shown to have alternate-form reliability of .95 (Aron & Aron, 1992).

The inter-rater reliability of coding support in the conversations was assessed with Cohen's kappa. According to Landis and Koch (1977), a score between .61

and .80 indicates substantial agreement. The micro support coding for each turn (see Table 1) was collapsed to represent one of five options: (1) No support coded (2) Emotion-focused Approach (3) Emotion-focused Avoidance, (4) Problem-focused Approach, and (5) Problem-focused Avoidance. Inter-rater agreement (kappa) for the turns in each conversation was first computed. The average inter-rater agreement across all conversations was then calculated and found to be acceptable (average kappa = .77 [*SD* = .06]). Disagreements were resolved through discussion and consensus.

Results

Preliminary Analysis: Friendship and Conversation Characteristics

Personality, gender, and friendship. In support of IPT, which claims Warmth and Dominance are orthogonal traits, the measures of Dominance and Warmth were not significantly correlated with each other, $r = .046$, $p = .524$; also in support of IPT, friends were positively correlated on the dimension of Warmth, ICC = .218, $p = .005$. Although IPT would expect friends to be negatively correlated on Dominance, there was no significant relationship found between friends' Dominance scores, ICC = -.005, $p = .524$.

Female participants rated themselves significantly higher on Warmth ($M = .22$, $SD = .96$) than male participants ($M = -.31$, $SD = .90$), $t(196) = 3.70$, $p < .001$. In addition, female friends reported being somewhat closer immediately before the conversation ($M = 5.09$ out of 7, $SD = .12$) than male friends ($M = 4.56$ out of 7, $SD = 1.10$), $t(132) = 2.54$, $p = .012$. With respect to Dominance, no significant differences

were found between women (M = .10, SD = .92) and men (M = .03, SD = 1.10), $t(197) = .446$, $p = .656$.

Personality complementarity. Although personality complementarity was treated continuously in the main analyses, a categorical breakdown of complementarity is presented here for illustrative purposes. With respect to Dominance, 15% of friends were strongly complementary (over 2 *SD* difference), 27% were moderately complementary (between 1 and 2 *SD* difference), and 58% were not complementary (less than 1 *SD* difference). With respect to Warmth, 25% of friends were strongly complementary (over 0.5 *SD* difference), 29% were moderately complementary (between 0.5 and 1 *SD* difference), and 46% were not complementary (over 1 *SD* difference). Consistent with ITP, nearly twice as many friends were extremely different (i.e., over 2 *SD*) on Dominance (15%) compared to Warmth (8%).

Conversation characteristics. Analyses focused on 248 conversations out of the expected 268; this included ten (15%) Seekers who produced only two conversations, one from each friend about the same problem, that met the study's protocol; the other 57 Seekers (85%) produced all four conversations, two from each friend about two problems. In the latter situation, data from the two conversations with Helper A were averaged for core analyses, and likewise for Helper B.

Content, context, and typicality of conversations. Seekers discussed a wide variety of interpersonal problems. Topics included slovenly housemates, friends' or housemates' drug use or wellbeing, friend betrayal, maintaining friendships from high school, romantic breakups, lingering romantic feelings involving ex-partners,

romantic feelings for friends, intrusive parents, rude classmates, bosses who disclose too much, and lazy or overbearing teachers. Seekers discussed problems with friends most often (52%), followed by romance-related concerns (18%), housemates or roommates (12%), mothers (5%), bosses (4%), teachers (3%), and fathers (1%). Seekers reported that about half of the problems (49%) initially occurred within two days prior to the conversation. Another third of the problems (35%) were reported to have been ongoing for a week or longer. For about half of the problems (54%), Seekers also reported having discussed some aspect of the concern with the Helper at an earlier time. Helpers reported that most of the conversations took place in the evening (61%) or in the afternoon (31%), and at the residence of one of the friends (76%). Last, friends described the conversations as quite typical of how they normally talk to each other, Seekers: $M = 6.15$ out of 7, $SD = 1.13$; Helpers: $M = 6.05$ out of 7, $SD = 1.10$.

Seriousness of problem and effectiveness of support. On average, Seekers rated the problem they were going to talk about as moderately serious, or 4.26 out of 7 ($SD = 1.55$). Seekers also described the support their Helpers provided as moderately effective. For example, Seekers reported feeling significantly less negativity about the problem after the conversation ($M = 2.42$, $SD = 1.30$) compared to before the conversation ($M = 2.86$, $SD = 1.44$), $t(237) = 8.02$, $p < .001$. In addition, Seekers evaluated the support on average as moderately high on both factors: Utility support, 5.31 out of 7 ($SD = 1.17$); Sensitivity support, 5.68 out of 7 ($SD = 1.21$).

Enacted support. Seekers transcribed the first ten minutes of their conversations. On average, the transcriptions were 1790 words long (*SD* = 465) and contained 96 turns (*SD* = 41). The number of words spoken and the number of conversation turns were highly positively correlated ($r = .565$, $p < .001$). Seekers began talking about the problem on average on the third turn, 3% into the conversation, (*SD* = 6%). Friends stopped talking about the problem on average at the 88th turn, 96% into the conversation (*SD* = 12%). Therefore, friends spoke about the problem for 92% (*f* = 86) of the conversation turns. Because friends switched who spoke at each turn, Helpers had opportunities to voice support for half of those turns (*f* = 43 turns, *SD* = 21).

On average, 72% of Helpers' turns (*SD* = 19%) were coded as a type of enacted support. The support was fairly evenly distributed between Emotion-focused (32% of turns) and Problem-focused (34% of turns) types. However, Avoidance oriented support in both Emotion-focused and Problem-focused styles occurred infrequently (i.e., Problem-focused Avoidance: 2% of all turns; Emotion-focused Avoidance: 3% of all turns). Most of the Problem-focused support took the form of offering perspectives (42%), asking clarifying questions (31%), suggesting what to do (18%), and minimizing the problem (4%). Most of the Emotion-focused support took the form of offering reassurance (59%), empathy (28%), and criticism (4%). Emotion-focused support and Problem-focused support were significantly negatively correlated ($r = -.180$, $p = .038$). Because each Helper turn could be coded as a form of

support or not (i.e., 28% of turns on average were not coded as any type of support), this negative correlation was not a necessary outcome of the percentage metric.

Comparing enacted support between Helpers and conversations. The enacted support offered to a Seeker by Helper A and by Helper B was not significantly correlated (Emotion-focused, ICC = .047, p = .312, Problem-focused, ICC = -.118, p = .894). The type of support that Helpers offered in their two conversations was significantly positively correlated (Emotion-focused: r = .295, p = .01; Problem-focused: r = .270, p = .02). This supports the decision to combine the conversation data from the Helper's two conversations. Combining the Helpers' two conversations is advantageous from a pragmatic standpoint (i.e., fewer parameters in an already complex analysis), and it also aligns with prior research that demonstrates personality is most clearly reflected in aggregated measures of behavior as opposed to behavior examined in a single occasion (Epstein, 1979; Todd, Tennen, Carney, Armeli, & Afflect, 2004). Furthermore, consistency across a Helper's conversations in combination with the finding that Problem-focused and Emotion-focused support were negatively correlated suggests that Helpers characteristically enacted one support style over the other.

Analytic Strategy for Polynomial Regression, Surface Modeling, and Mediation

Hypotheses were tested using polynomial regression and surface modeling (see Edwards, 2002; Shanock et al., 2010). The model that is used to test personality

complementarity and social support is displayed below, where S refers to the Seeker's trait, and H refers to the Helper's trait (based on Edwards, 2002):

$$\text{Social Support Factor} = b_o + b_1S + b_2H + b_3S^2 + b_4SH + b_5H^2 + e$$

As illustrated in the above equation, this model incorporates both friends' scores on a trait, and their squared and interaction terms. The regression creates a three-dimensional model of the relationship between the Seeker's and Helper's traits and the outcome of support effectiveness. The coefficients in the model (b_1 through b_5) are then combined in various ways in surface modeling to test linear and nonlinear characteristics of the relationship between personality fit and the support factor.

The following steps were followed to run the analyses. First, predictors were centered in an effort to avoid multicollinearity (Aiken, West, & Reno, 1991). Because the Warmth and Dominance predictors were *z*-score based factors, they were essentially centered at 0 with most scores falling between plus or minus two standard deviations. Next, hierarchical regression was used to control for the effect of several measures that have been found to be associated with the effectiveness of social support in prior studies. Specifically, friends' Gender (dummy coded 1 = male), friends' average Closeness pre-conversation, Seekers' Negative Affect pre-conversation, and Seekers' Wellbeing were all entered into the model predicting support effectiveness. To test the relationship between personality complementarity and support effectiveness, the five personality variables (i.e., S, H, S^2, SH, H^2) were then added to the model.

When personality complementarity significantly added to the variance explained by the model, surface modeling was conducted to test the three-dimensional relationship (see Shanock et al., 2010). Instead of focusing on the significance of the individual personality coefficients in the regression, surface modeling makes use of the unstandardized coefficients from all five of the personality variables to create four new coefficients. These surface coefficients test the shape of the three-dimensional relationship between the two friends' traits (i.e., personality complementarity) and support effectiveness. The following coefficients were computed: a_1 = the slope of perfect agreement between the Helper's and Seeker's traits and support effectiveness; a_2,= the nonlinear curvature of perfect agreement between the Helper's and Seeker's traits and support effectiveness; a_3 = the slope of increasing divergence between the Helper's and Seeker's traits and support effectiveness, and a_4 = the nonlinear curvature of divergence between Helper's and Seeker's traits and support effectiveness.

The mediation component of each hypothesis was tested using Baron and Kenny's (1986) causal steps process. Before describing this test of mediation it is important to note that much more complex analyses are available to test full and partial mediation of nonlinear effects through bootstrapping (see Edwards, 2007; Preacher, 2015); however, for the purpose of this exploratory study with a relatively small sample size, the more basic causal steps process of mediation is reasonably justified. Accordingly, for enacted support to fully mediate the relationship between personality complementarity and support effectiveness, three conditions must be met:

(1) Personality complementarity (i.e., S, H, S^2, SH, H^2) must be significantly associated with predicting Seekers' ratings of support effectiveness beyond the control variables (i.e., Change in R^2), and at least one of the surface tests of complementarity (i.e., a_1, a_2, a_3, a_4) must be significant;

(2) Personality complementarity must be significantly associated with predicting Helpers' enacted support beyond the control variables, and at least one of the surface tests of complementarity must be significant;

(3) When both personality complementarity and enacted support are entered into the regression model predicting support effectiveness, the coefficient for enacted support must be significant and all of the surface tests of complementarity that were significant in Step 1 must become nonsignificant. This would provide statistical evidence that enacted support fully mediates the relationship between trait complementarity and the effectiveness of support.

To test these conditions, a sequence of polynomial regression analyses was performed for each set of hypotheses. Below, the expected direction of significance for the regression model coefficients and surface tests is outlined for Hypothesis 1. Appendix A outlines the statistical evidence needed to support Hypotheses 2 and 3.

For Dominance complementarity (i.e., S, H, S^2, SH, H^2) and the Seeker's evaluation of the Helper's Utility support, the variance explained by complementarity

beyond the control variables (Change in R^2) should be significant, and the nonlinear curvature of trait divergence (a_4) should be positive and significant. This would indicate that as friends' Dominance scores diverged, the Seeker rated the Utility of the Helpers' support higher. This would fulfill Step 1 of the mediation process. Figure 3 depicts these expected results graphically. For the Helper's enacted Problem-focused support to mediate this relationship, Dominance complementarity should be associated with Problem-focused support in the same way that it is associated with Helper's Utility support. That is, complementarity should explain a significant portion of variance beyond the control variables (Change in R^2), and the nonlinear curvature of trait divergence (a_4) should be positive and significant. This would fulfill Step 2 of the mediation process. Step 3 of the mediation process would be satisfied if, after entering both Dominance complementarity and Problem-focused support into the model, the coefficient of Problem-focused support was positive and significant and all of the surface tests representing complementarity were nonsignificant.

In contrast to the hypothesized relationships above, the expectation was that Warmth complementarity would not be associated with the evaluation of Utility support. Accordingly, the variance in Utility support explained by Warmth complementarity beyond the control variables (Change in R^2) should be nonsignificant, or if it is significant, all four surface tests should be nonsignificant. This would indicate that the friends' Warmth complementarity was not reliably associated with the Seeker's evaluation of Utility support, and any variance explained

by the model (R^2) was due to the control variables and the linear effects of each friend's traits by themselves (i.e., not how the Seeker's and Helper's traits were related to each other).

Mediation Analyses

The means and standard deviations of all the variables used in the models are presented in Table 2. The correlations of the variables are presented in Table 3. The results of the hierarchical polynomial regression analyses to test Step 1 and Step 2 of the mediation process are presented in Table 4; the results of Step 3 are displayed in Table 5.

Dominance Complementarity and Evaluation of the Support's Utility. In support of Hypothesis 1A, Dominance complementarity, and not Warmth complementarity, was significantly associated with the evaluation of Utility support. In this relationship, Dominance complementarity explained nearly 13% more variance in Utility support beyond the control variables, $F(5, 124) = 3.706$, $p = .004$. The four surface tests were then computed. Only one of the surface tests was significant ($a_4 = .49$, $p = .002$). The positive value of this coefficient demonstrates that increasing dissimilarity in dispositional dominance between Seekers and Helpers was associated with Seekers evaluating the Utility of Helpers' support higher. Figure 5a depicts the results of this convex curvilinear relationship along the line of trait divergence.

Also of interest, the surface test depicting a curvilinear relationship along the line of trait agreement was marginally significant ($a_2 = -.28$, $p = .071$). The negative

value of this coefficient suggests that sharing extremes on the trait of dominance (both friends very high or low) was associated with Seekers rating the Utility of the Helper's support lower. When a_4 is positive and a_2 is negative the surface reflects a saddle configuration. A saddle configuration appears when two of the diagonal tips of the surface curve upwards (i.e., the line of trait divergence in this model) and the other two diagonal tips of the surface curve downwards (i.e., the line of trait agreement in this model; for context, see Figure 5a; Edwards, 2002). In other words, the saddle configuration reflects that Seekers who were extremely different than their Helpers on Dominance evaluated the Utility of the support very high, whereas Seekers who were extremely high or low on Dominance and similar to their Helpers, rated the Utility of the support very low. This relationship was not hypothesized to occur based on IPT.

Next, Hypothesis 1B was examined to test whether the Helper's enacted Problem-focused support mediated the relationship between Dominance complementarity and the Seeker's evaluation of the Helper's Utility support. The first condition of the mediated model was satisfied in the testing described above. To test the second condition, the relationship between Dominance complementarity and enacted Problem-focused support was examined.

Satisfying the second step of mediation and in support of Hypothesis 1B, Dominance complementarity, and not Warmth complementarity, was significantly associated with enacted Problem-focused support (see Table 4 for results). In this relationship, Dominance complementarity explained 29.3% more variance in

Problem-focused support beyond the control variables, $F(5, 124) = 11.038$, $p < .001$. The four surface tests were then computed. Both of the curvilinear surface tests were significant in the same direction as the surface tests reported in Step 1 ($a_2 = -.07$, $p = .002$; $a_4 = .11$, $p < .001$). Increasing dissimilarity in dispositional dominance between Seekers and Helpers was associated with Helpers enacting more Problem-focused support. Sharing extremes on the trait of dominance (both friends very high or low) was associated with Helpers enacting less Problem-focused support. Figure 5b depicts the results of this saddle relationship that is tipped upwards along the line of trait divergence and downwards along the line of trait agreement.

Notably, as previously reported the Avoidance side of Problem-focused support occurred infrequently (~10% of all Problem-focused support turns). Analyses were rerun with the more traditional Problem-focused Approach support only and the models reached only marginal significance. Therefore, it is reasonable to assume that including both Approach and Avoidance oriented support is important in examining interpersonal interactions. However, because Avoidance oriented support happened in such small quantities a larger sample is required to more closely examine the significance of its particular dispersion.

To test the third condition of mediation, both the Dominance complementarity measures and the enacted Problem-focused support measure were entered into the regression to predict the evaluation of Utility support. The same set of control variables was included as well. The results are depicted in Table 5. Only the coefficient on enacted Problem-focused support remained significant; all of the

coefficients on the personality variables are nonsignficant and all of the surface tests are nonsignificant. This indicates that the Helper's Problem-focused support fully mediated the effect of Dominance complementarity on the Seeker's evaluation of the Helper's Utility support. The model overall explained 21.4% of the variance in the Seeker's evaluation of the Helper's Utility support, $F(10, 123) = 3.53$, $p = .001$). Hypothesis 1B was accepted based on these results.

Warmth Complementarity and Evaluation of the Support's Sensitivity. No support was found for Hypothesis 2A. Neither Warmth complementarity nor Dominance complementarity explained a significant amount of the variance of the evaluation of Sensitivity support (Change in R^2). Because the first Step of mediation was not satisfied, the next two Steps were not performed for this set of Hypotheses.

According to direct correlations (see Table 3), the evaluation of Sensitivity support was significantly and positively associated with Helper's enacted Emotion-focused support ($r = .204$, $p = .019$) and the Seeker's Warmth. The effect of Seeker's Warmth, however, did not retain this significant relationship when Closeness pre-conversation, Wellbeing, and Gender were controlled for in the regression model (see Table 4). This null result can in part be explained by correlations between the Seeker's Warmth and the control constructs, which reduced the ability of the Seeker's Warmth to uniquely predict Sensitivity evaluations. A similar null finding occurred when enacted Emotion-focused support was entered as a predictor variable of the evaluation of Sensitivity support after the other control variables were entered first. According to this hierarchical regression,

Emotion-focused support only explained an additional 2% of the variance of Sensitivity evaluation beyond the control variables, $F(1,128) = 2.88$, $p = .092$. In summary, several constructs other than personality complementarity appear to be related to the evaluation of Sensitivity support in this corpus of conversations, but the current sample was unable to overcome error variance and correlations amongst the predictor variables to make reliable conclusions.

Personality Complementarity and Negative Affect post-conversation. Failing to support Hypothesis 3A, personality complementarity with respect to friends' Warmth and Dominance was not significantly associated with Negative Affect post-conversation. Personality complementarity only explained about 1% additional variance in Negative Affect post-conversation. Because the first Step of mediation was not satisfied, the next two Steps were not performed for this set of Hypotheses. Notably, Negative Affect pre-conversation was a significant predictor of a large amount of the variance in Negative Affect post-conversation (Standardized $b = .85$). Although the amount of additional variance explained by personality complementarity was not reliable, exploratory surface modeling of the effects of personality complementarity on Negative Affect post-conversation were significant. The results of this modeling are presented graphically in Appendix B for future research consideration.

Two Case Studies of Dominance Complementarity and Non-complementarity

Next, the conversations of two Seekers with each of their Helpers are presented to illuminate how friends who were either opposite on Dominance

(complementary) or similarly high or low on Dominance (noncomplementary) managed to produce more or less effective Problem-focused support, respectively. In the course of considering how social support was actually enacted in each friendship, the friends' levels of Warmth and Emotion-focused support are also discussed, suggesting that more complex interactions between Warmth and Dominance might have occurred that were beyond the quantitative analyses of this study.

In both case studies, the friends were female and all of the friendships were rated as very close (~6 on a 7-point scale). In addition, all of the conversations focused on romance-related problems and occurred during the second round of conversation collection. The second round of conversations was intentionally selected with the belief that friends might have acclimated to the study's protocol and might have acted more realistically in comparison to the first set of conversations. The major difference between the two case studies is that in the first case, the Seeker scored as Dominant, whereas in the second case, the Seeker scored as Submissive. As was true for all of the transcribed conversations, all names and identifying information have been changed to protect the confidentiality of participants. To aid the reader in tracking which friends scored high on Dominance and which friends scored low, pseudonyms were chosen that start with the letter "D" (e.g., "Diane" scored as Dominant) or "S" (e.g., Susan was Submissive). As an overview for the two cases, Table 6 presents the general personality and conversation characteristics of the friendships, which are illustrated visually in Figure 6.

Case study one: Diane, a High Dominance Seeker. The first set of conversations illuminates what support can look like in friendships when the Seeker is Dominant and the Helper is either Submissive (i.e., complementary) or Dominant (i.e., noncomplementary). The Seeker, Diane (z = +1.03), and her first Helper, Donna (z = +1.06), both scored as Dominant. Diane's second Helper, Susan, was below average on Dominance (z = -1.06), and was therefore complementary with Diane.

In conversations with each Helper, Diane described being frustrated with her ex-boyfriend, Scott, because he wanted her to stop communicating with him. Diane believed she had followed Scott's wishes, despite continuing to send him friendly messages on the holidays and running into him during social gatherings. Reflecting the statistical findings, Diane evaluated the Utility of the conversation with Donna as relatively low (z = -0.70). Notably, Donna provided mostly Emotion-focused support (31% of turns) and very little Problem-focused support (2% of turns). Donna's Emotion-focused support took the form of mixing empathy with acknowledgement tokens ("Yeah"), and she tended to finish Diane's thoughts for her. Through this process, Donna appeared to communicate being on the same page as her friend, almost from the very start of the conversation:

> Diane: So like then coming to campus, we [she and her boyfriend] still talked and like I don't know, we Skyped a few times. We were pretty good friends and then just one day he was just like we need to stop talking, uh, in order for us to get over each other. And I was just like, you know, that's cool.
>
> Donna: Yeah.
> Diane: As long as you can promise me that like later on in life we can just be friends you know, like cause I just hate to, I just for myself, hate –

Donna: to throw–
Diane: to throw, yeah, to just throw people away.

Donna: Yeah.

As the conversation progressed, Donna offered responses that were increasingly empathetic. This empathy might have been evoked by Diane's description of a recent encounter with Scott that ended especially poorly. Another contributing factor could be that Donna rated herself very highly on Warmth ($z = +1.80$). Being high on both Warmth and Dominance matches the profile of extraversion (McCrae & Costa, 1989), which might have driven Donna's assertive empathy in the example below:

Diane: And he was just being the biggest douche. Like he was saying the dumbest things. Like there was this one time where he was like, "Oh yeah, I flirt with her." I've known her for like three years and it's a mutual friend of ours. And I was just like, like, what? And he was just like, "Oh yeah, but she has a boyfriend, but I don't really care, like I kiss her on the cheek and stuff." And I'm just like, what are you doing?

Donna: Oh my god!
Diane: You're a dick. She has a boyfriend and you're saying that in front of me, who is a mutual friend.

Donna: Yeah.
Diane: And then like, I don't know, like the conversation kinda dragged on and he was still kinda avoidant. Like there was this one point where he took a shower. And then he was just like, "I'm gonna go for a walk." And he takes a fucking shot of Scotch and walks out in his underwear. And I was just like, what are you doing?

Donna: Awh!
Diane: So when he left, I was talking to his friend, and um he was just like, he thinks you still want to be with him and that's not what he wants. I was just like, I don't want to be with him.

Donna: Yeah.

Diane's conversation with Helper Susan provided a stark contrast from the former conversation. In contrast to Donna's Emotion-focused support, Susan consistently provided Problem-focused suggestions and criticism throughout their conversation. Diane introduced her problem in a long exposition (over 700 words) before Susan hesitantly advised and criticized in the very first turn of the conversation, "I don't . . . I don't think you need to keep seeing him. [. . .] It seemed like you were trying really hard, that you didn't want to see him, but you did." Diane assertively responded by claiming that she did want to see him, confirming her ambivalence. As Diane continued to express frustration with Scott for thinking she wants to "be with him," Susan seemed to calmly, but directly, reject Diane's persistent desire to remain friends with Scott:

> Diane: 1: I just don't want him thinking that I want to be with him. I haven't texted him about the incident and I'm probably never going to text him again. But I don't know, I don't like that he thinks that and I wish he didn't, because that's not the case. I just wanted to be friends.
>
> Susan: I don't think there's really any getting through to him. […] He obviously didn't want to see you. He didn't respond back [at their last contact] and that was obviously saying like, okay, whatever, forget it.
> Diane: Yeah.
>
> Susan: Yeah, but it just seems like he wants to show you that like, "I don't want to be with you, which is why I [he] avoided you." But then when you were there [at the party], he was trying to show you like, "Yeah, I'm so cool."
> Diane: Yeah, I don't know, but it just sucks.
>
> Susan: I don't think there is any need to text him.
> Diane: Yeah. I'm trying to take that advice of yours, if they don't give a shit about you, don't give a shit about them.
>
> Susan: Exactly
> Diane: I need to stop caring.

Susan communicated a message of minimizing the problem with Scott; that is, she encourages Diane to simply let him go and be done with it. Although Diane resisted Susan's advice early in the conversation, she appeared to verbally acquiesce by the end. The advice might not be what Diane wanted to hear, but Diane acknowledged she should not "give a shit" about Scott. She confirmed this interpretation of the conversation by evaluating the Utility of Susan's support as above average (z = +0.58) compared to the other conversations in the sample.

Perhaps unsurprisingly, while viewing Susan's Problem-focused support as useful, Diane also evaluated the Sensitivity of Susan's support as a little below average (*z* = -0.25). In addition to offering advice that was initially distasteful to Diane, Susan provided Emotion-focused support at a below average rate (16% of turns, *z* = -0.44). Also notable is that Susan rated herself somewhat Cold (*z* = -0.63), in contrast to the highly Warm Donna. Donna provided Empathy in a forceful manner (e.g., "Oh my God!"), while Susan's Emotion-focused support tended to take the form of dryly confirming Diane's perspective (e.g., "Yeah, it seems like he purposely did that"), or being critical of her (e.g., "He didn't want to see you"). It is conceivable that Diane might have been more open to Susan's advice earlier in the conversation if Susan had expressed more sympathy. This hints at the complex nuances of how types of support potentially interact with each other and with friends' personalities.

Case study two: Sarah, a Low Dominance Seeker. The second set of conversations illustrates what support can look like when the Seeker is low on Dominance rather than high. In these conversations, the Seeker, Sarah, was below

average on Dominance (z = -2.09). Her first Helper, Sue, was similarly low on Dominance (i.e., not complementary; z = -1.74). Her second Helper, Doreen, was above average on Dominance (z = +1.26), and was therefore complementary with Sarah.

In talking with both Sue and Doreen, Sarah described being frustrated with being single and not being able to find someone who was a good match. Exactly what Sarah meant by a 'good match' is unclear in the conversations, although at times she referenced personality and normalcy as important qualities. Throughout the conversations Sarah vacillated between wanting to find someone and being satisfied with remaining alone. She complained in a manner that suggested there was no hope for change, and therefore no reason to do anything.

Sarah evaluated the Utility of the conversation with Sue (z = -1.13) much lower than her conversation with Doreen (z = +1.45). This was likely due to the fact that Sue provided no Problem-focused support during the conversation. Instead, Sue offered a large amount of Emotion-focused support (33% of turns) that seemed to take the form of co-rumination. At the start of the conversation, Sue immediately joined with Sarah to reinforce Sarah's perspective on the woes of romance by claiming similarity:

> Sarah: I've noticed that a lot of people don't [. . .] They just don't match well with me. You know? And like finding someone like that is very rare.
>
> Sue: Yeah. And you know how we don't like people easily, like we don't crush easily? It makes it even harder to find a guy.
> Sarah: I can't see myself liking someone that doesn't match well with me.

> Sue: Yea, and for some reason, our circle of friends, there are no guys that I would even consider dating.
> Sarah: Yeah, and when I see my friends getting into relationships, I'm just like really? How do you not see you guys don't really fit well together?
>
> Sue: It's really hard.
> Sarah: […] It's just really weird. This is a sucky subject to talk about.
>
> Sue: It's making me more and more depressed. (Both laugh)

Both friends laughed at the end of this exchange, bonding around their increased misery. Sarah subsequently evaluated the Sensitivity of Sue's support as slightly above average ($z = +0.32$). Curiously, in the prior set of conversations it was the dominant (warm, extraverted) Helper Donna who offered Emotion-focused support, but Donna's support tended to be strongly empathic and did not take appear to take the form of co-rumination. Perhaps this was because Donna did not personally share her friend's problem. It is also conceivable that Diane's dominance made it less easy for Donna to participate mutually in the problem (i.e., to co-ruminate). In contrast, Sarah easily accommodated Sue as they co-told a shared problem:

> Sarah: And then all the guys we do know, they're really really really really really nice at first and they seem to be really really really—
>
> Sue: Their true colors reveal themselves.
> Sarah: Really good at first.
>
> Sue: Why can't I just meet a decent normal guy that I can like?
> Sarah: I don't even have to like them, can I just meet a normal person?
>
> Sue: No, but I want to like someone.
> Sarah: I do too, but like I just want someone that's normal.
>
> Sue: That's too hard.

The conversation ended with Helper Sue flatly claiming that it was simply too hard to find a normal partner. Consequently, Sarah seemed to leave the conversation reassured that finding a good romantic match was impossible.

Doreen, Sarah's other Helper, was high on Dominance and complementary with Sarah. Doreen provided Problem-focused support in nearly three-quarters of her available support turns, and Sarah evaluated the Utility of that support very highly. In the first case study presented, Helper Susan also offered considerable Problem-focused support, but did so somewhat hesitantly (e.g., "I don't. . ., I don't think you need to [. . .]"). In comparison, in the present case, Doreen did not seem to understand her friend's problem. Doreen's problem talk consisted of riddling her friend with questions about the issue. This presumably served to help Doreen better understand how to help Sarah and may also have allowed Doreen to control the flow of the conversation. Also, amidst these guiding questions, Doreen offered suggestions of what to do:

> Doreen: I wonder what you're looking for though.
> Sarah: I don't know.
>
> Doreen: Like do you know has anybody ever had a crush on you?
> Sarah: No, people don't tell me or a few people tell me [. . .] It's like, I don't care cause I don't like you. (both laugh)
>
> Doreen: I feel like you just have to try and put yourself out there if you really wanna be with somebody.
> Sarah: [. . .] I just don't think I will have a lot of dating experience because I don't like people that easily and—
>
> Doreen: You just value the [a genuine] relationship more?
> Sarah: Maybe. I don't know. I don't know if I value it more, I value it highly. I don't know how other people value relationships.

> Doreen: And you don't think you'll ever have that Sex in the City lifestyle?
> Sarah: No.
>
> Doreen: Do you like that lifestyle?
> Sarah: No.

Doreen then proceeded to challenge Sarah's need to find a romantic partner who was a good match, announcing that she and her boyfriend did not match, but that he was nevertheless kind and fun. After Sarah responded, "But I've had guys like that too. I tell them everything, and they're really good friends. And I hang out with them all the time," Doreen claimed there was more to a romance, such as physical intimacy and feeling safe:

> Doreen: And you get to cuddle with them.
> Sarah: I have to cuddle with them?
>
> Doreen: You get to cuddle.
> Sarah: That would be fine, but I just didn't like them. […] But I have no problem doing that with anyone. Maybe I'm treating everyone the same.
>
> Doreen: No, because there's also the fact that like it's also nice of someone to be there to hold you and protect you from stuff, like the bad things out there. Remember, when I was going to go home at 3 in the morning, it felt nice when he [her boyfriend] was picking me up.

At the conclusion of the conversation, Doreen still struggled to understand why Sarah found it so difficult to locate a boyfriend; she continued to enact a similar pattern of questions mixed with suggestions:

> Doreen: So I don't understand what you're looking for?"
> Sarah: I don't know either. You just know it if you like somebody. And I can't say—
>
> Doreen: Do you not feel lonely?
> Sarah: No, I have guys.

> Doreen: (laugh) But it's different when you have someone else.
> Sarah: Yeah, sometimes I want someone, but most of the time, I have you guys. I'm not lonely and by myself. Like when I'm watching sappy movies, I don't have anyone to hold hands with. I don't know, too hard.
>
> Doreen: (laugh) Too hard?
> Sarah: I quit.
>
> Doreen: You haven't even started! (laugh)

Doreen persisted in pressing the perspective that having a boyfriend has advantages over other types of relationships. Sarah finally broke down and echoed almost the exact same hopeless message that her friend Sue had expressed in the prior conversation, "I don't know, too hard. [. . .] I quit." In a stark contrast, Doreen's last message challenged Sarah to action with a laugh and a shout, "You haven't even started!"

Although Sarah evaluated the Utility of Doreen's support highly, she also rated the Sensitivity of the support as very low ($z = -1.40$). In the context of the conversation's conclusion, this is understandable: Sarah appeared to be exhausted by Doreen's relentless pressure to figure out the problem and solve it.

In the context of Doreen's personality, however, Sarah's low evaluation of the Sensitivity of the support is somewhat strange. Doreen was moderately high on Dominance and above average on Warmth. Combining these traits forms another extraverted profile, one that is shallower but still similar to that of Helper Donna in the first case study. However, Donna filled almost a third of her support turns with empathy and reassurance, and her support was evaluated as average on Sensitivity (z

= +0.18). In comparison, Doreen offered almost no Emotion-focused support (2% of turns), and the support was suitably evaluated as lacking Sensitivity. One possible explanation could be that Donna's much higher Warmth (z = +1.80) versus Doreen's moderate Warmth (z = +0.76) enhanced Donna's enacted empathy. However, the correlation between Helper Warmth and Emotion-focused support in the sample was nearly zero (r = .009), which suggests this is not a viable account.

An explanation that is more consistent with the evidence is that differences in the Seekers' Dominance were interacting with the personality of the Helpers, who in this case were both extraverted (i.e., high on Dominance and Warmth). For example, dominant Seekers might evoke extraverted Helpers to empathize with them, such as when Diane repeatedly narrated how she was feeling at the time about something Scott said: "I was just like, what? [. . .] I'm just like, what are you doing?" Her extraverted Helper Donna responded to the second plea with empathy, "Oh my god!" In contrast, submissive Seeker Sarah repeatedly professed ignorance and then asked her extraverted Helper questions, such as, "That's why I don't know. Am I being too like, fair to everyone?" This type of behavior might evoke extraverted Helpers to provide Problem-focused suggestions or perspectives instead of Emotion-focused empathy.

Summary of case studies. Overall, these case studies illustrate how Helpers who are complementary with their Seekers on Dominance manage to enact more useful Problem-focused support than Helpers who are not complementary. However, the mechanisms through which this useful Problem-focused support emerged differed

depending on whether the complementary Helper was Dominant or Submissive. Dominant complementary Helpers appeared to take control of Submissive Seekers' problems through a mix of directed questioning and suggested solutions. Submissive complementary Helpers, on the other hand, appeared to let their Dominant Seekers narrate their problem at length before more tentatively, though potentially critically, offering suggestions. In addition, although no statistical support was found for a link between Warmth complementarity and Emotion-focused support, the case studies suggest that Dominance complementarity between friends might influence how Warmth is associated with Emotion-focused support and the evaluation of the Sensitivity of the support. Submissive Seekers appeared to evoke advice from Warm extraverted Helpers, whereas Dominant Seekers appeared to evoke empathy from Warm extraverted Helpers. Thus, even though the interpersonal traits are orthogonal, more complex interactions might be occurring between Dominance and Warmth with respect to social support dynamics.

Discussion

The results of this study illustrate the complex ways in which personality interactions dynamically contribute to producing effective social support. The central finding pertained to the association between friends' complementarity on Dominance and the perceived Utility of the support that was provided. Social support was perceived as most helpful when it occurred within the context of a friendship that was characterized by differences on Dominance; this association was fully mediated by the type of support that was given. It also bears noting that the analyses adhered to

best practices for testing mediation models as described by Cole and Maxwell (2003), who argued that it is essential for tests of mediation to utilize data collected at three distinct time points. In the current study, the assessment of personality occurred first; this was followed by the support conversations, which were then evaluated for their effectiveness. As described below, the novel design and analytic methods used in the current study provide deeper insight into the nuanced nature of these associations. These findings are elaborated below, along with recommendations for young adults who are seeking social support.

In support of Hypothesis 1, friends' Dominance complementarity was associated with evaluating the Utility, but not the Sensitivity, of the support more positively. Problem-focused support fully mediated this relationship. It was found that Helpers who were increasingly different in Dominance, either higher or lower, in comparison to their friends offered more Problem-focused support, and their Seeker friends evaluated the support as more helpful. This finding reflected a nonlinear convex relationship; although not hypothesized, the relationship between Dominance complementarity and support dynamics approached a saddle configuration. That is, friends who were very similar to each other and very extreme on Dominance (high or low) tended to enact even less Problem-focused support and to evaluate that support even lower than friends who were similar to each other and moderately high or low on Dominance. Consequently, being extremely low or high on Dominance could be quite helpful or potentially hurtful to a support Seeker depending on whether the Helper's personality is also extreme in a complementary or non-complementary way.

This finding would not have been obtained without the novel methods employed in this study. Polynomial regression and surface modeling (Edwards, 2002; Shanock et al., 2011) were used to detect the nonlinear relationship between complementary Dominance and social support; a linear test of significance likely would have supported a conclusion of no relationship. Most studies that have aimed to connect dispositions to coping and social support attempt to do so linearly and unilaterally, and without taking into account the possibility that the other person's personality might be important (David & Suls, 1999; Swickert, Hittner, & Foster, 2010). The finding that the fit between friends' personalities is related in a nonlinear fashion to support dynamics is a significant contribution to understanding how dispositions reciprocally contribute to coping.

In addition to focusing on nonlinear effects, the present study also attended to Problem-focused Avoidance support such as minimizing the problem and communicating disinterest in the problem; traditionally these behaviors have not been conceptualized as forms of support (Barbee & Cunningham, 1995). Although nontraditional support only comprised approximately 10% of all enacted Problem-focused support, models that used only Approach or only Avoidance oriented support did not reach full significance. This suggests that Helpers who are increasingly different on Dominance compared to their Seeker friends are more likely to use both types of Problem-focused support. Although not systematically analyzed in the present study, the case studies suggest that enacting Approach support may have more to do with the type of problem as opposed to the friends' personalities. For

example, the Submissive Helper in the first case study offered some Avoidance support (i.e., communicating that the Seeker should stop engaging the problem), but this support was offered in response to a Seeker who would not let go of her ex-boyfriend.

Although what inspires Helpers to offer Approach versus Avoidance types of Problem-focused support is unknown, the findings suggest that high and low Dominance Helpers provide both types of support. This is inconsistent with the existing circumplex conceptualization of social support, which maps Submissive Helpers onto Avoidance support and Dominant Helpers onto Approach support (Wiggins & Trobst, 1997). The existing circumplex model of supportive behaviors does not take into account the effect of Seekers' dispositions on Helpers' tendencies to offer supportive behaviors, even though IPT predicts dispositions will interact to shape behavior and perceptions of behavior (Carson, 1969). Like much of the empirical support of IPT, evidence for this circumplex model of support has come from survey research that asked participants to imagine what they would do in hypothetical scenarios (Trobst, 2000). Such methods do not actually test how individuals' dispositions interact with known others in meaningful contexts. Indeed, the current study is one of the first studies to date to explore IPT with respect to social support in close friends who were not in explicit laboratory conditions.

In contrast to the findings of Dominance complementarity, Hypothesis 2 was not supported. Friends' Warmth complementarity was not found to be associated with evaluating the Sensitivity of the support higher, or with enacting more Emotion-

focused support. In a review of interpersonal findings, Orford (1986) found that the Cold side of the Warmth dimension often does not support interpersonal theory. For example, cold or hostile submissive behavior is more likely to evoke friendly dominant behavior than hostile dominant behavior. More recent observational studies that use latent variables to reduce measurement error have not always found this problem, at least under laboratory conditions (e.g., Sadler & Woody, 2003). Nevertheless, this phenomenon, sometimes referred to as 'the left side problem' (for context, see the left side of Figure 1), may contribute to the lack of support for Hypothesis 2. It may be that Warmth interacts with Dominance, especially in relationships that involve at least one friend who is characteristically Cold. In these friendships Dominance might drive the effect of complementarity, but Warmth might further moderate the expression of that complementarity.

Evidence from the case studies supports the idea that the influence of Warmth on social support behavior might be better understood by also taking levels of Dominance into account. Helpers who were high on Dominance and Warmth (i.e., extraverted) appeared to tailor their interactions to their Seeker's level of Dominance. For instance, Dominant Seeker Diane appeared to evoke Emotion-focused empathy from her extraverted Helper by powerfully describing the absurdity of her ex-boyfriend's behavior. This occurred despite the fact that the friends were not complementary on Warmth or Dominance. In contrast, Submissive Seeker Sarah complained about her lack of a boyfriend without describing concretely why she was single. This behavior appeared to evoke her extraverted Helper into asking her

numerous guiding questions followed by advice. Surprisingly, it was this friendship that was characterized by Warm complementarity (i.e., both friends were quite Warm), and yet the Helper provided Problem-focused support almost exclusively. Failing to offer Emotion-focused support before giving advice has been associated with more negative evaluation of the advice (Pearlin & McCall, 1990). Indeed, it was not until the end of the conversation that Susan's advice, which was not preceded by empathy, appeared to resonate with Diane. Collectively, these case study findings suggest more complex interactions exist among Warmth and Dominance and support styles. A more sophisticated coding scheme than used in the present study is needed to systematically capture how Warmth and Dominance might interact both within a person and with the traits of another person.

Another interpretation of the lack of support for Hypothesis 2 is that a friend's expression of relationship problems serves as a strong situation that does not allow for individual differences in Warmth to be expressed (Mischel, 1977). For example, it would be difficult to observe overt differences in the trait of agreeableness in employees based on interactions with their boss; the power differential in such relationships limits the visible expression of (dis)agreeableness in employees. Likewise, the conventions of social support conceivably press all Helpers to be emotionally sensitive.

Differences in Emotion-focused support did emerge in the present findings, but these differences may be associated more strongly with, or moderated by, aspects of the problem itself, such as the severity or duration of the problem. Although co-

rumination has been associated with increasing relationship intimacy (Rose, 2002), Nolen-Hoeksema and Davis (1999) have found that adults who are high on trait rumination tend to receive less, sometimes more critical, support. A Seeker who tenaciously holds onto problems might be viewed as violating the conventions of social support by requiring too much from an increasingly worn out and frustrated Helper.

Hypothesis 3 also was not supported. Neither Dominance complementarity nor Warmth Complementarity was associated with Seeker's Negative Affect post-conversation. It is possible that two methodological changes would enhance the likelihood that effects for Negative Affect would be obtained in future research. In the current study, over 70% of the variance in Negative Affect post-conversation was explained by Negative Affect pre-conversation. Thus, the stability of Affect over short periods of time may trump the potential implications of support. Perhaps increasing the temporal spacing between pre- and post-conversation survey administration would allow for the effects of social support to materialize. A second potentially fruitful methodological change would be to focus only on serious problems. In the current study, the average severity rating was a 4.26 out of 7. Social support might have a more immediate impact on highly severe problems. Although these methodological changes may reveal associations between personality complementarity and Negative Affect, it also bears noting that some research has found that discussing troublesome events is unrelated to reducing Negative Affect. For example, in a series of studies, Rimé (for review, see 2009) has argued that

disclosing emotionally impactful events does not help a person feel better about the problem. Instead, people enjoy discussing problems with others because it creates intimacy with the listener and enhances the relationship. In this view, positive evaluations of the Seeker's support may, in fact, be a measure of how well the Helper evoked mutual disclosure and feelings of intimacy. Thus, it may be informative for future research to examine whether personality complementarity is associated with heightened relationship quality as opposed to reduced Negative Affect.

The reasons for why friends' Warmth complementarity and reduced Negative Affect were not associated with social support are underdetermined, and thus warrant further investigation. However, the present study suggests that friends' differences in Dominance are potentially beneficial. Based on these findings, brief suggestions for young adults seeking social support are outlined below.

Emerging adulthood is rife with change and challenges (Arnett, 2000; Centers for Disease Control & Prevention, 2011; Vollrath, 2000), and friends' personality differences have been viewed as one source of that difficulty. For example, college roommates who are different on extraversion have been found to report significantly more task conflict (Bono, Boles, Judge, & Lauver, 2002). The results from the present study, however, suggest that young adults who are experiencing interpersonal problems would benefit from turning to peers who are significantly opposite to them on Dominance; only 15% of the current sample of friends were strongly complementary on Dominance. Moreover, because Helpers with different personalities provided different types of support, young adults could potentially

benefit from seeking support from a diversity of peers. Prior research has also demonstrated that people who are extreme in their personality traits tend to be more vulnerable to developing psychopathology (Miller, Lyman, Widiger, & Leukefeld, 2001). However, the present findings suggest that two people who are extreme in opposing ways can effectively provide support to each other, while extreme similarity on Dominance can be problematic. For example, in the present study, Dominant Helpers who were similar to Seekers on that trait focused significantly less on solving the problem than friends who were complementary on Dominance. In addition, friends in the case studies who were similarly extreme in Submissiveness appeared to be particularly likely to co-ruminate. Although this pattern was described in just one example, it is of concern because Rose (2002) has demonstrated that co-rumination is detrimental to wellbeing, and may be especially troublesome for females (see also, Calmes & Roberts, 2008). Collectively, these recommendations run counter to some existing research findings pertaining to the risks of personality differences and personality extremity; it is therefore important that the quantitative results of the present study, and the case study illustrations in particular, be replicated with additional research.

Study Limitations and Future Directions

The limitations of the present study fall into two groups: analytic compromises associated with sample size, and generalizability associated with design choices. First, all studies could benefit from larger samples, but this is especially true when studying dynamic interactions. Large samples are required to account for the

addition of the interaction variables and the expected diminished effect sizes that accompany a model with a large number of parameters. For example, the effect of personality complementarity on Negative Affect was too small to be found statistically reliable in the current study.

The current sample size did allow for key variables, such as Gender and Wellbeing, to be controlled for while still examining mediation effects in the evaluation of the Utility of the support. The full model explained over 20% of the variance in the evaluation of the support's Utility. Larger studies would also allow for even more sophisticated tests of both nonlinear mediation effects and multilevel (i.e., nested data) influences, such as comparing the effect of which Helper is talked to first versus second. A larger sample would also allow for more systematic analyses of how Dominance and Warmth interact with each other in the expression and evaluation of support.

Moderation effects on the relationship between interpersonal complementarity and social support could also be better explored with larger samples. Future studies should examine how personality interactions are moderated by the type of problem discussed and facets of the friendship that extend beyond closeness, such as conflict and attachment (Chow & Buhrmester, 2011). Moreover, future studies should explore more dynamically how friends' social identities (e.g., gender, culture, social class) moderate the effect of personality interactions on social support. One exciting possibility could be to use the present methodology to explore how people with different social identities practice social support together. For example, many of the

existing studies on culture and social support compare Asians to European Americans. The findings of such studies are often reduced to simple group comparisons of frequency, such as studies that show Asians and Asian Americans seek out support less often and provide support in less overt ways than European Americans (Kim, Sherman, & Taylor, 2008). A more dynamic approach to the study of cultural differences could involve examining Seekers' interactions with Helpers who come from increasingly similar or different cultural backgrounds. This work could be carried out with either friends or romantic couples. Indeed, because interracial marriages are on the rise within the United States (e.g., Qian & Lichter, 2011), focusing on support patterns in romantic partners from different culture backgrounds could be a particularly worthwhile area for future research.

A second group of limitations focuses on design choices and the generalizability of the study's findings. One design choice was to have participants collect their support conversations in the context of a class assignment. Accommodations were made for many of the students who could not accurately complete the study's multifaceted protocol. Notably, the 60% inclusion rate in the current study is slightly higher than the average survey response rate found in academic and medical studies (Asch, Jedrziewski, & Christakis, 1997; Baruch, 1999). Reasons for not being able to do the protocol were diverse, but it is still likely that some students who were not included in the analyses differed in important ways from the core sample. In particular, students who were unable to recruit local friends who

met the study's criteria conceivably had different, perhaps poorer, social support resources than the analyzed participants.

Another design choice was that the social support analyzed for this study was audio-recorded for a class assignment. The recorder and assignment frame of the study might have influenced what Seekers were willing to discuss, how the friends talked in such a researcher-eavesdropping situation, and how Seekers rated the conversations (e.g., desire not to criticize friends on record). These concerns were minimized as much as possible. For example, all participants were blind to the hypotheses of the study. Friends were also personally involved in keeping their data confidential, that is, Seekers transcribed their own conversations. Most friends did reference the recorder or the nature of the assignment at the beginning of the conversation, but on average friends began talking about the problem by the third conversational turn. Also attesting to the ecological validity of the data is that both Seekers and Helpers rated the conversations as very typical of how they usually talk (over 6 out of 7).

A decision was made to focus exclusively on conversations about interpersonal problems. Personalities might interact in different ways or have a different influence on concerns that are achievement-related or finance-related. Because these other types of concerns tend to evoke Problem-focused coping more strongly than Emotion-focused coping (Folkman & Lazarus, 1980; Horowitz et al., 2001), it is possible than friends' Dominance complementarity might be even more strongly associated with effective support for non-interpersonal concerns. Overall,

this study is best viewed as an early rigorous step in studying how friends' personalities interact during social support.

Conclusion

The current study demonstrates that the challenge of collecting naturalistic support data in a dynamic analytic framework is worth the effort. Although collecting, transcribing, and systematically coding micro interactions in conversations is a time intensive process, the results of this study shed light on patterns that would have been difficult to detect through more distal methods. For example, the findings showed that complementarity on Dominance contributed to Helpers' tendency to focus on solving the problem, which was in turn predictive of Seekers evaluating the support more positively. This mediational association constitutes an important contribution to the existing literature because it provides ecologically valid insight into the process underlying social support effectiveness. The case study findings yielded further insight into the complexity of the social support process, particularly as it pertained to interactions between Warmth and Dominance between friends. For example, Dominant Diane evoked empathy from Warm Donna, and Submissive Sarah evoked advice from Warm Doreen. Consequently, IPT should attend more closely to how traits interact with each other within a person, as well as between Seeker and Helper, in the domain of social support. Last, the results of the present study suggest that examining the effects of personality fit on support should not be restricted to linear relationships or be based too strongly on prior linear relationship findings. Although past research has argued that personality extremes and personality differences are

sources of problems, the current findings indicate that two people who are extremely opposite on Dominance can effectively provide support to each other, whereas extreme similarity on Dominance can reduce the perceived effectiveness of social support. Hence, friends' personalities appear to interact in diverse ways to produce unexpected outcomes.

Appendix A

Outline of the statistical evidence needed to support Hypotheses 2 and 3. The evidence needed to support Hypothesis 1 is outlined in the Analytic Strategy section of the Results.

Hypothesis 2

For Warmth complementarity (i.e., S, H, S^2, SH, H^2) and the Seeker's evaluation of the Helper's Sensitivity support, variance explained by complementarity beyond the control variables (Change in R^2) should be significant, and the nonlinear curvature of trait divergence (a_2) should be negative and significant. This would indicate that as friends' Warmth scores diverged, the Seeker rated the Sensitivity of the Helpers' support lower. This would fulfill Step 1 of the mediation process. Figure 4 depicts these expected results graphically. For Helper's enacted Emotion-focused support to mediate this relationship, Warmth complementarity should be associated with Emotion-focused support in the same way that it is associated with Helper's Sensitivity support. That is, the variance in support explained by complementarity beyond the control variables should be significant (Change in R^2), and the nonlinear curvature of trait divergence (a_4) should be negative and significant. This would fulfill Step 2 of the mediation process. Step 3 of the mediation process would be satisfied if, after entering both Warmth complementarity and Emotion-focused support into the model, the coefficient of Emotion-focused support was positive and significant and all of the surface tests representing complementarity were nonsignificant.

In contrast to the hypothesized relationships above, the expectation was that Dominance complementarity would not be associated with the evaluation of Sensitivity support. Accordingly, the variance in Sensitivity support explained by Dominance complementarity beyond the control variables (Change in R^2) should be nonsignificant, or if it was significant, all four surface tests should be nonsignificant. This would indicate that the friends' Dominance complementarity was not reliably associated with the Seeker's evaluation of Utility support, and any variance explained by the model (R^2) was due to the control variables and the linear effects of each friend's traits by themselves (i.e., not how the Seeker's and Helper's traits were related to each other).

Hypothesis 3

For Dominance complementarity and Seeker's Negative Affect post-conversation, variance explained by complementarity beyond the control variables (Change in R^2) should be significant, and the nonlinear curvature of trait divergence (a_4) should be negative and significant. This would indicate that as friends' dominance scores diverged, the Seeker reported feeling less Negative Affect after getting the Helper's support. This would fulfill Step 1 of the mediation process. For Helper's enacted Problem-focused support to mediate this relationship, the variance explained by Dominance complementarity beyond the control variables (Change in R^2) should be significant, and the nonlinear curvature of trait divergence (a_4) should be positive and significant. This would fulfill Step 2 of the mediation process. Step 3 of the mediation process would be satisfied if, after entering both Dominance

complementarity and Problem-Focused support into the model, the coefficient of Problem-Focused support was negative and significant and all of the surface tests representing complementarity were nonsignificant.

For Warmth complementarity and Seeker's Negative Affect post-conversation, variance explained by complementarity beyond the control variables (Change in R^2) should be significant, and the nonlinear curvature of trait divergence (a_4) should be positive and significant. This would indicate that as friends' warmth scores diverged, the Seeker reported feeling more Negative Affect after getting the Helper's support. This would fulfill Step 1 of the mediation process. For Helper's enacted Emotion-focused support to mediate this relationship, the variance explained by Warmth complementarity beyond the control variables (Change in R^2) should be significant, and the nonlinear curvature of trait divergence (a_4) should be negative and significant. This would fulfill Step 2 of the mediation process. Step 3 of the mediation process would be satisfied if, after entering both Warmth complementarity and Emotion-focused support into the model, the coefficient of Emotion Focused support was negative and significant and all of the surface tests representing complementarity were nonsignificant.

Appendix B

Exploratory surface modeling of the relationships between personality complementarity and Negative Affect post-conversation. Personality complementarity did not reliably add to the variance in Negative Affect already explained by the control variables (Change in R^2 = ~0.01). The surface model tests of complementarity, however, were significant in unexpected ways. For Dominance, increased similarity on the trait's extremes was associated with higher Negative Affect post-conversation (see below, Figure B1). For Warmth, increased similarity on the trait was associated with higher Negative Affect post-conversation (see below, Figure B2). Future study of these patterns, if found reliable in larger sample sizes, is warranted because they are not predicted by IPT.

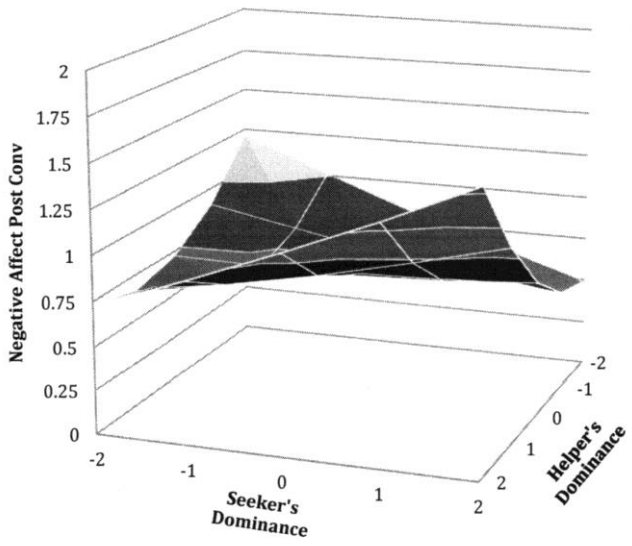

Figure B1. Three-dimensional visualization of the relationship between Seeker's Dominance, Helper's Dominance, and Seeker's Negative Affect post-conversation. a_1 = .09; a_2 = .17 is significant, $p < .05$; a_3 = -.06; a_4 = .03.

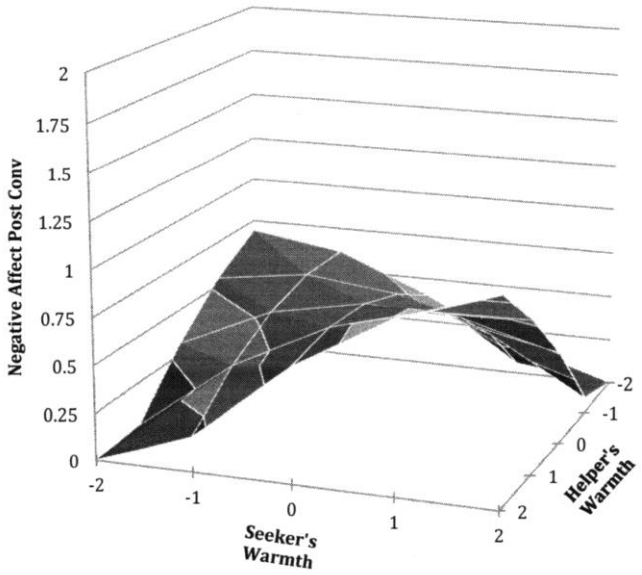

Figure B2. Three-dimensional visualization of the relationship between Seeker's Warmth, *Helper's* Warmth, and Seeker's Negative Affect post-conversation. $a_1 = 10$; $a_2 = .06$; $a_3 = -.01$; $a_4 = -.25$ is significant, $p < .05$.

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Table 1

Social Support Strategies Modified From Barbee and Cunningham's (1995) Interactive Coping Communication Behavior System

Support	Micro Code	Definition	Examples
Emotion-Focused Approach	Empathy	Allies emotionally with Seeker	-It still sucks though, I'm sorry.
	Reassurance	Agrees with Seeker's perspective, tells Seeker things will be okay, supports Seeker by criticizing others	-Yeah, that really doesn't sound like anything he was going to say. -I just wish she would cut the bullshit!
	Compliments	Compliments abilities or behavior of Seeker	-Nice. Well played
	Feelings Query	Asks about how Seeker is feeling; encourages disclosure	-Do you feel, like, disrespected, though?
Emotion-Focused Avoidance	Irritation	Annoyance directed toward Seeker	-You don't think that she just made it pretty clear that like she doesn't want to like talk with you?
	Criticism	Criticizes how Seeker has dealt with the problem or understands the problem	-I know, like, there are plenty of relationships that never get labels and seem to work out. But I've never heard of one that hasn't ended badly.
	Sarcasm	Ridicules Seeker or problem	-You poor baby. Your boyfriend loves video games more than he loves you.
Problem-Focused Approach	Questions	Asks about details of the problem	-Do you think she's gonna try to get Barry to take the ticket?
	Perspective	Provides own or others' perspectives on the problem, helps to clarify the issue with new or different perspectives	-Like, um you know how I might talk about one of our housemates to you, to vent about it, but it doesn't mean I don't love them. So, maybe with Sarah it's like she just needed to tell someone and she trusts you.
	Suggestions	Suggests what the Seeker can do to solve the problem	-What if you like, sat down with him, and made like a taper off plan, and be like "this is what will make me okay with this, if we do this together and we can like, both put our input into it"?
	Tangible	Offers to personally help Seeker	-I'll go with you, and stay in the other room while you talk to him.
Problem-Focused Avoidance	Ignorance	Expresses a lack of expertise	-Well, I just don't know what you should do. I mean, I don't know.
	Disinterest	Conveys lack of interest or concern	-Yeah, yeah. How's work by the way?
	Minimize	Frames problem as not serious or as something everyone goes through	-I think that's part of just like having a job. Like you're told to um, you're told to accomplish like these things by this time.

Table 2

Descriptive Statistics and Reliabilities of Measures

	M	**(*SD*)**	**Range**	**α**
Personality facets				
Assured-dominant	4.87	0.95	1-8	.80
Unassured-submissive	3.97	1.14	1-8	.82
Warm-agreeable	6.19	0.93	1-8	.83
Cold-hearted	2.55	1.05	1-8	.78
Arrogant-calculating	3.87	1.08	1-8	.79
Aloof-introverted	3.17	0.99	1-8	.84
Unassuming-ingenuous	4.22	1.07	1-8	.74
Gregarious-extraverted	5.64	0.99	1-8	.81
Warmth factor (*z* based)	**0.05**	**0.96**	**-2.3-2.5**	**.89**
Dominance factor (*z* based)	**0.08**	**0.98**	**-2.2-2.8**	**.89**
Evaluation of Utility Support	**5.31**	**1.17**	**1-7**	**.90**
Evaluation of Sensitivity Support	**5.68**	**1.21**	**1-7**	**.95**
Negative Affect post-conversation	**2.42**	**1.14**	**1-7**	**.85**
Negative Affect pre-conversation	**2.85**	**1.18**	**1-7**	**.85**
Closeness pre-conversation	**4.92**	**1.14**	**1-7**	**.80***
Wellbeing (facets below)	**3.51**	**.72**	**1-5**	**.86**
Depression[a]	3.42	.65	1-5	.80
Satisfaction	3.59	.87	1-5	.84

Note: *Reliability of the single-item *IOS* Closeness scale was computed from ratings from both friends from both conversations.
[a]Items were reverse scored.

Table 3

Correlations Among Core Variables Included in Mediation Models

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Seeker Warmth	1.00												
2. Seeker Dominance	-.001	1.00											
3. Helper Warmth	**.219**	-.003	1.00										
4. Helper Dominance	.030	-.005	.002	1.00									
5. Emotion-Focused Support	.073	.057	.009	-.036	1.00								
6. Problem-Focused Support	.009	-.088	-.055	**.224**	**-.180**	1.00							
7. Sensitivity Support Evaluation	**.226**	.146	.073	.052	**.204**	.074	1.00						
8. Utility Support Evaluation	.095	-.055	-.052	.150	-.068	**.423**	**.722**	1.00					
9. Negative Affect post-Conversation	-.142	.064	-.069	.069	.131	-.023	**.202**	-.094	1.00				
10. Negative Affect pre-Conversation	**-.201**	.072	-.110	.032	.091	-.043	.044	.011	**.846**	1.00			
11. Closeness pre-Conversation	**.203**	.099	-.036	.020	.055	**.188**	**.179**	.152	-.079	-.064	1.00		
12. Wellbeing	**.187**	.122	.058	.097	.132	.116	**.216**	.050	-.075	-.024	.110	1.00	
13. Gender[a]	**-.233**	.180	**-.260**	.037	**-.165**	-.108	**-.262**	-.126	.100	.143	**-.216**	**-.276**	1.00

Note: Shaded rows indicate variables controlled for in the mediation models. Bold typeface indicates $p < .05$.
[a]Gender was dummy coded Male = 1.

Table 4

Results of Polynomial Regression and Surface Modeling to Test Step 1 and Step 2 of Mediation Analysis

		Control[a] *b*		**Personality Complementarity** *b* (se)						**Surface Tests**			
		N_{pre}	R^2	S	H	S^2	SH	H^2	Change[b] R^2	a_1	a_2	a_3	a_4
Step 1	**DV: Utility Evaluation**	.01[c]	.025										
	IV: Dominance	-.02	-	-.00 (.11)	.03 (.11)	-.01 (.07)	-.39** (.12)	.11 (.08)	.127**	.03	-.28	-.03	.49**
	IV: Warmth	-.01	-	.10 (.13)	.02 (.12)	-.16 (.10)	.20 (.16)	-.25 (.08)	.105	-	-	-	-
	DV: Sensitivity Evaluation	.09[c]	.112**										
	IV: Dominance	.08	-	.07 (.110	.07 (.11)	.00 (.07)	.04 (.12)	-.01 (.09)	.006	-	-	-	-
	IV: Warmth	.11	-	.01 (.02)	-.01 (.02)	-.02 (.01)	.00 (.02)	.01 (.01)	.029	-	-	-	-
	DV: Negative Affect Post	.81**[c]	.718**										
	IV: Dominance	.80**	-	.01 (.06)	.07 (.06)	.01 (.04)	.10 (.06)	.06 (.04)	.012	-	-	-	-
	IV: Warmth	.81**	-	.04 (.07)	.05 (.06)	-.06 (.05)	.16 (.08)	-.04 (.05)	.011	-	-	-	-
Step 2	**DV: Problem-focused**	-.00[c]	.047										
	IV: Dominance	-.01	-	-.01 (.02)	.01 (.02)	.01 (.01)	.10** (.02)	.02* (.01)	.293**	.00	-.07*	.00	.11**
	DV: Emotion-focused	.016[c]	.049										
	IV: Warmth	.015	-	.01 (.02)	-.01 (.02)	-.02 (.01)	.00 (.02)	.01 (.01)	.028	-	-	-	-

Note: Abbreviations in the second row are: N_{pre} = Negative Affect Pre-Conversation, S = Seeker Trait, H = Helper Trait, R^2 = portion of total variance explained by model, a_1 = slope of the line of trait agreement, a_2 = curvature of the line of trait agreement, a_3 = slope of the line of divergence, a_4 = curvature of the line of trait divergence, * $p < .05$, ** $p < .01$.

[a]The effects of Gender, Wellbeing, and Closeness Pre-conversation were also controlled for in the model but they are not displayed because they did not reach significance in any of the full models.

[b]Additional variance explained by personality complementarity beyond the control variables.

[c]Negative Affect pre-conversation coefficient before personality complementarity was added to the model.

Table 5

Results of Polynomial Regression to Test Step 3 of Mediation Analysis

	Control[a] *b*		**Personality Complementarity** *b* (se)				**Support** *b* (se)		**Surface Tests**			
	N_{pre}	S	H	S^2	SH	H^2	PFS	R^2	a_1	a_2	a_3	a_4
DV: Utility Evaluation												
IV: Dominance	.00	.01 (.11)	.017 (.10)	-.03 (.07)	-.20 (.13)	.07 (.08)	1.83** (.58)	.214**	.02	-.26	-.01	0.14

Note: Abbreviations in the second row are: N_{pre} = Negative Affect Pre-Conversation, S = Seeker Trait, H = Helper Trait, PFS = Problem-focused Support enacted, R^2 = portion of total variance explained by model, a_1 = slope of the line of trait agreement, a_2 = curvature of the line of trait agreement, a_3 slope of the line of divergence, = a_4 = curvature of the line of trait divergence, ** $p < .01$.

[a]The effects of Gender, Wellbeing, and Closeness pre-conversation were also controlled for in the model but are not displayed because they did not reach significance in the model.

Table 6

Characteristics of Case Study Friends and their Conversations

		Traits		Enacted Support		Evaluation of Support	
	Friends	***Dominance***	***Warmth***	***Problem-focused***	***Emotion-focused***	***Utility***	***Sensitivity***
Set 1	Seeker Diane	Dominant	Average +				
	Helper Donna	Dominant	Highly Warm	Very Low	Average +	Below Average	Average +
	Helper Susan	Submissive	Cold	High	Below Average	Above Average	Average -
Set 2	Seeker Sarah	Highly Submissive	Warm				
	Helper Sue	Highly Submissive	Warm	Very Low	Average +	Low	Average +
	Helper Doreen	Dominant	Warm	Very High	Very Low	Very High	Very Low

Note: Shaded rows represent the two friendships characterized by complementary Dominance. Score labels were chosen to represent deviations from the mean, e.g., "Highly Dominant" = above 1.5 standard deviations, "Dominant" = between 1 and 1.5 standard deviations, "Above Average" = between 0.5 and 1 standard deviations, "Average +" = between the mean and 0.5 standard deviations.

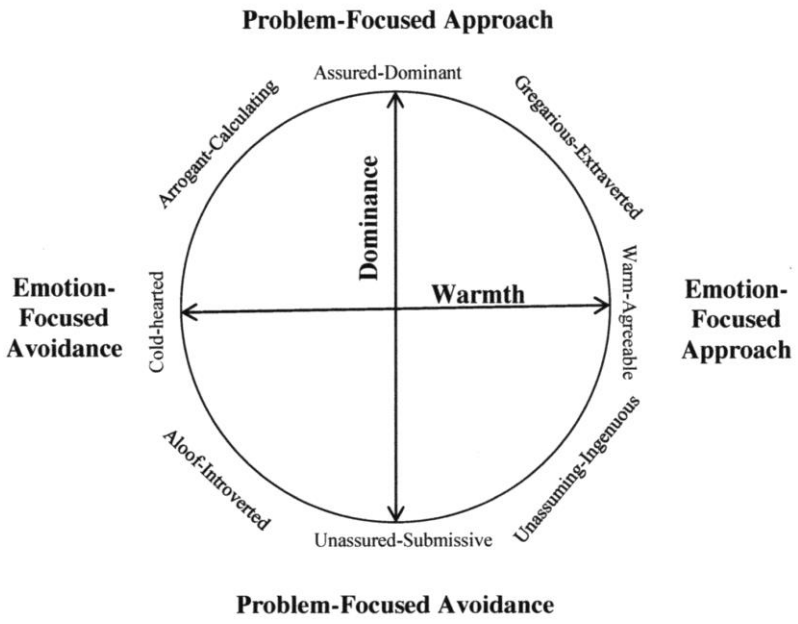


Figure 1. Hypothesized relationship between the Interpersonal Circumplex and enacted support.

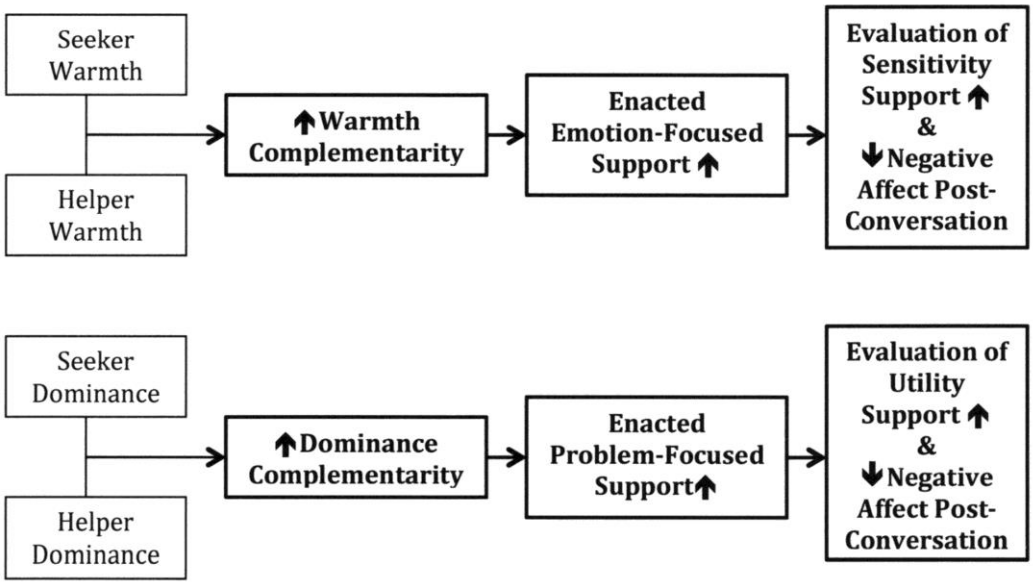


Figure 2. Hypothesized mediation models of the relationships between interpersonal complementarity, enacted support, and support effectiveness.

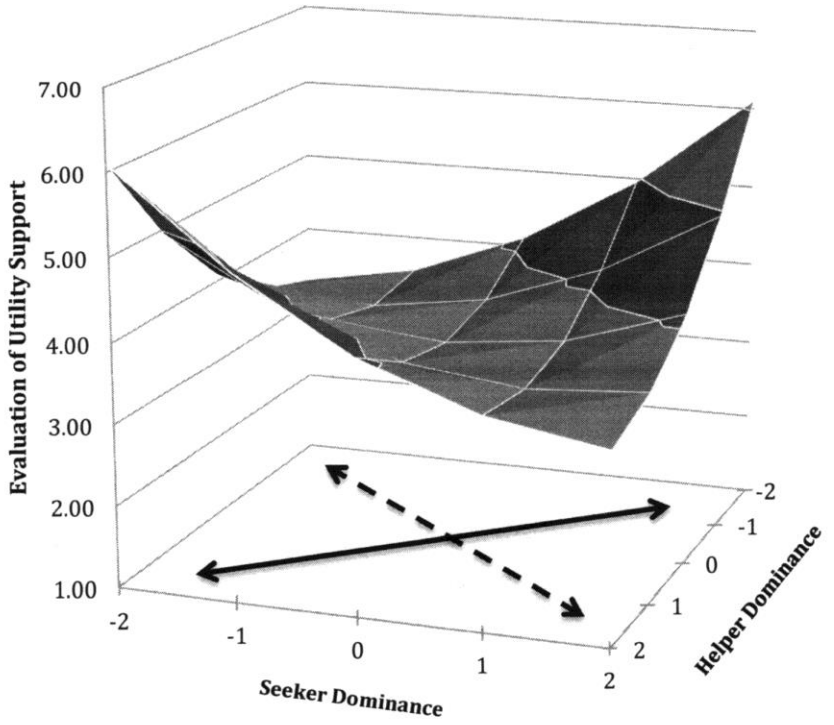


Figure 3. Hypothesized (H1) three-dimensional convex relationship between Seeker's trait Dominance, Helper's trait Dominance, and evaluation of the support's Utility (based on IPT). The solid line in the x-y plane indicates the plane of complementary reciprocity, where Seeker and Helper have increasingly different dispositions on Dominance beyond the dashed line of perfect trait agreement. The dashed line in the x-y plane indicates personality misfit, where Seeker and Helper share similar dispositions on Dominance. The hypothesized relationship between friends' complementary Dominance and the Seeker's Negative Affect (H3) post-conversation would be concave instead of convex. That is, Negative Affect would be highest on the line of perfect agreement and become increasingly low as the friends' Dominance traits diverged.

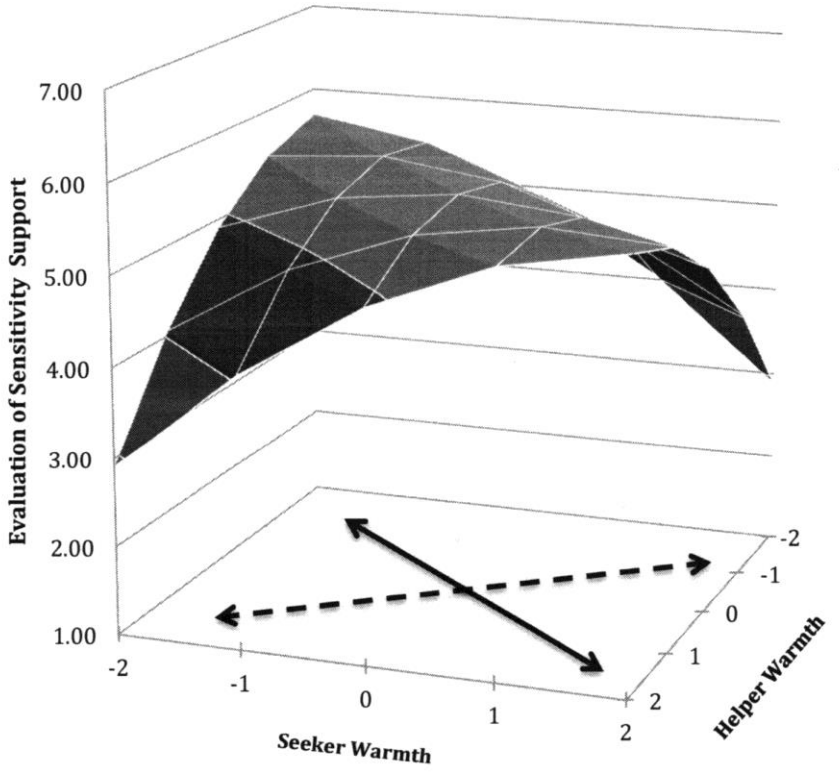
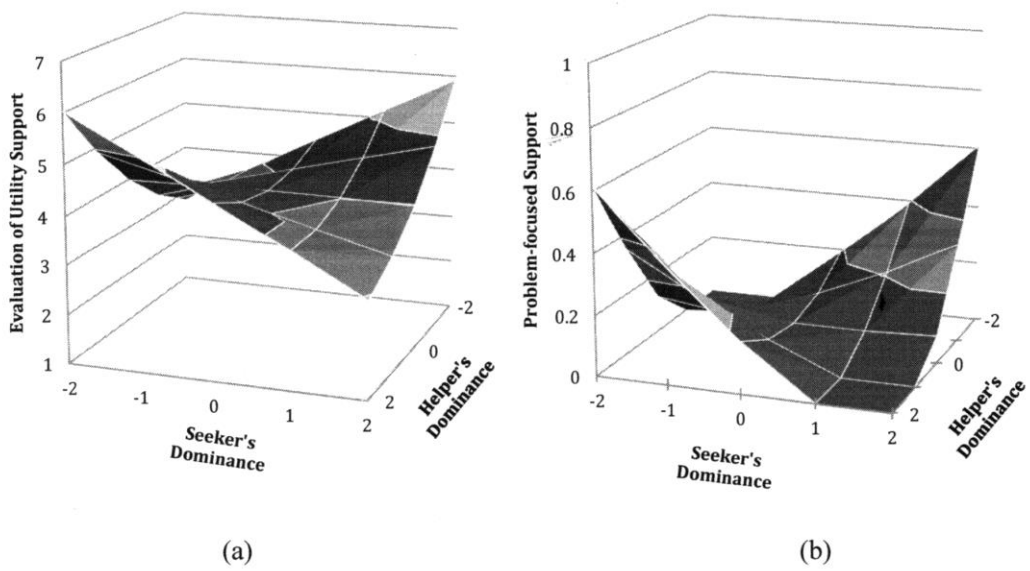


Figure 4. Hypothesized (H2) three-dimensional concave relationship between Seeker's trait Warmth, Helper's trait Warmth, and evaluation of the support's Sensitivity (based on IPT). The solid line in the x-y plane indicates the line of complementary correspondence, where Seeker and Helper share similar dispositions on Warmth. The dashed line in the x-y plane indicates personality misfit, where Seeker and Helper have increasingly dissimilar dispositions on Warmth beyond the line of perfect trait agreement. The hypothesized relationship between friends' complementary Warmth and the Seeker's Negative Affect post-conversation (H3) would be convex instead of concave. That is, Negative Affect would be lowest on the line of perfect agreement and become increasingly high as the friends' Warmth traits diverged.



(a) (b)

Figure 5. These images illustrate that Problem-focused support fully mediated the effect of complementary Dominance on the evaluation of the support's Utility.
(a) Three-dimensional visualization of the significant convex relationship between Seeker's Dominance, Helper's Dominance, and Seeker's evaluation of the support's Utility, with the effects of other variables controlled for. The relationship approaches a saddle configuration.
(b) Three-dimensional visualization of the significant saddle relationship between Seeker's Dominance, Helper's Dominance, and Helper's Problem-focused support, with the effects of other variables controlled for.

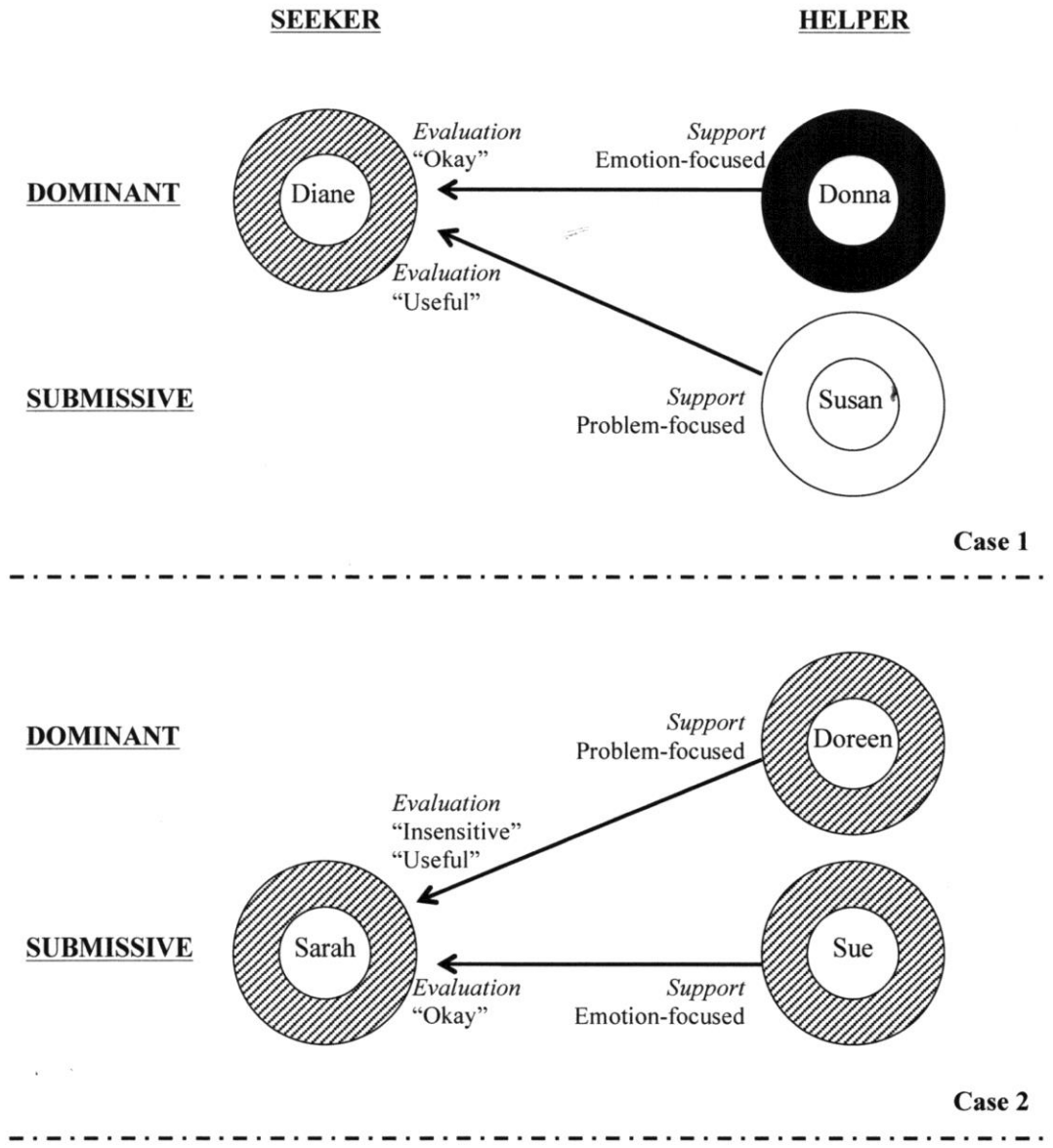


Figure 6. Visual depiction of enacted support and support evaluation patterns in case studies. Okay = Average evaluation of support; Solid dark shade = Highly Warm; Striped shade = Warm; No shade = Cold