

RELATIONSHIP NORM STRENGTH:  
MEASUREMENT STRUCTURE, DYADIC INTERDEPENDENCE,  
CORRELATES, CAUSES AND CONSEQUENCES

By

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## Abstract

The study of norms and close relationships are two pillars of social psychological scholarship, yet the two topics are rarely studied in tandem. When relationship norms have been the subject of empirical study, researchers have focused on evaluating the importance of their *content* for relational processes. In the present dissertation, I propose the *strength* of relationship norms as a topic worthy of empirical attention. Across five studies, including correlational, quasi-experimental, experimental, and dyadic designs, I evaluated the primary hypothesis that relationship norms would be stronger in relationships characterized by greater affiliative motivation, operationalized both in terms of organically occurring relationship types, and ratings of relationship quality. Throughout the five studies, I also tested secondary hypotheses related to the association between relationship norm strength and perceived similarity, asset and resource sharing, and conflict between relationship partners, as well as the extent to which members of romantic couples abided by the norms of their relationship. In Study 1, participants ( $n = 100$ ) perceived relationship types implying greater commitment (e.g., committed romantic relationships) as having stronger norms than those implying lesser commitment (e.g., casual sex relationships). In Study 2, I piloted a multidimensional measure of relationship norm strength and documented similar differences in norm strength and relationship quality among participants ( $n = 312$ ) who were currently in the relationship types examined in Study 1. In Study 3, some aspects of relationship norm strength and relationship quality were positively associated for members of romantic dyads ( $n_{couples} = 25$ ,  $n_{individuals} = 11$ ). Individuals in a relationship with stronger norms generally reported complying with their relationship's norms to a greater extent, though the opposite was sometimes true of their partner; individuals also exhibited a large amount of bias in appraising their partner's level of norm compliance. In Study 4, participants currently in a romantic relationship ( $n = 286$ ) primed to recall memories of high relationship

quality reported feeling stronger norms in their romantic relationship, relative to those primed to recall moments of low relationship quality. Finally, in Study 5, participants currently in a romantic relationship ( $n = 239$ ) primed to perceive their relationship norms as strong perceived their relationship as being higher quality than those in a control condition. These five studies provide initial promising support for the hypothesized role of relationship norm strength. I discuss their implications and the importance of continued investigations of relationship norm strength.

*Key words:* close relationships; norms; sexuality; social influence;

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Relationship Norm Strength: Measurement Structure, Dyadic Interdependence,  
and Correlates, Causes, and Consequences

**Introduction**

The study of social norms has been at the heart of social psychology since the earliest days of the discipline (Sherif, 1936). The norms of a particular group help to structure the social environment by providing a common syntax for interaction among in-group members, such as specifying appropriate roles and behaviors (Cartwright & Zander, 1953; Miller & Prentice, 1996; Sherif et al., 1988). Put another way, group norms are socially created standards of proper conduct (Triandis, 1994; VandenBos, 2007). Subsequently, in-group members are socially rewarded for conforming to the norms of their group, whereas deviance from group norms can result in punishment, such as social rejection or other forms of punitive action from within the group (Festinger et al., 1950; Crandall, 1988).

Likewise, the social psychological study of adult romantic and sexual relationships (hereafter, simply referred to as relationships) has been established for nearly half of a century (Rubin, 1970, 1974). Relationships are an integral source of life meaning, security, and personal wellbeing for many people (Biswas-Diener & Diener, 2001; Diener & Seligman, 2002; Mikulincer & Shaver, 2007a). Indeed, the benefits of being in a high quality relationship are numerous and substantive. Individuals in high quality relationships live longer lives (Lillard & Waite, 1995), are less susceptible to serious physical illnesses (see Coombs, 1991), have better mental health (Braithwaite, Delevi, & Fincham, 2010; Mikulincer & Shaver, 2007b), and are overall happier people (Diener & Seligman, 2002).

Yet despite the broad and separate empirical literatures on norms and relationships, these two domains of research have rarely been studied in tandem. The dearth of research on norms

within relationships is striking when one considers (a) the prevalence of cultural norms surrounding relationship conduct (e.g., Simon & Gagnon, 1986; Sakaluk et al., 2013; Wiederman, 2005), (b) the abundant evidence of social punishment (e.g., derogation) for those who deviate from cultural norms for relationship conduct (e.g., Crawford & Popp, 2003; Reiss, 1964, 1967; Sakaluk & Milhausen, 2012; Sprecher, Treger, & Sakaluk, 2013), and (c) the central role that relationship partners play in many people's lives (Mikulincer & Shaver, 2007a; Fraley & Davis, 1997). Presumably, a relationship partner should be in an optimal position to enforce relationship norms, considering that he or she is the only person able to directly monitor—and therefore reward or punish—much of the partner's relational conduct (Deutsch & Gerard, 1955).

Those programs of research that have examined relationship norms, such as Clark's comparisons of relationships adopting communal v. exchange norms (Clark & Mills, 1979, e.g., Muise, Impett, Kogan, & Desmarais, 2012), or research hailing from the sexual scripts perspective (Simon & Gagnon, 1986, e.g., Sakaluk, Todd, Milhausen, Lachowsky, & URGiS, 2014), have exclusively focused on differences in relationship norm *content*. That is, scholars have examined how relationships are impacted by the adoption of one kind of norm versus another, such as in the case of Williamson and colleagues' (1996) exploration of how relationship partners are affected by refusing to help a partner in need, depending on whether a communal or exchange norm is in place. Much less is known, however, about the nature and importance of relationship norm *strength*. In other words, relationship norms, regardless of their content, may manifest in particular ways that make them more or less likely to be abided by the relationship partners adopting them.

With this dissertation, I aimed to fill several gaps in the relationship norm literature, in this first-ever empirical examination of relationship norm strength. I begin by discussing some of

what is known about relationship norm content; this discussion will be informed by conceptualizing relationships as a form of social group. I then turn to introducing norm strength—a concept, though new to relationship research, that has been studied at other levels of social organization. Afterwards, I present the results of five studies, in which I attempted to develop a psychometrically sound measure of relationship norm strength, and tested hypotheses regarding the relationship norm strength construct.

### **A Disclaimer on Distinctions Among Types of Norms**

Classically, norms have been categorized into one of two types (see Deutsch & Gerard, 1955). Sometimes norms are described as leading to informational social influence (e.g., Sherif, 1936) or normative social influence (e.g., Asch, 1951), and other times norms are referred to as descriptive or injunctive (Cialdini, Reno, & Kallgren, 1990). Essentially, this terminology is intended to distinguish between norms that suggest what it *is* that people typically do, versus norms that suggest what people *ought* to do. Furthermore, informational influence is typically assumed to lead to *private acceptance*, whereas normative influence may prompt only *public compliance* with norms (Allen, 1965; Kelman, 1958) Others, however, have not viewed these distinctions as necessary. Turner (1991) for example noted that a “dual process” perspective implies that:

social norms have no effect on private attitude change and that information influence is non-normative . . . In contrast, it can be argued that informational influence is socially mediated and normative, that norms about preferences and values are informative about appropriate, correct beliefs in the same way and reflect the same processes as norms about facts and demonstrably correct solutions, and that individual and society are not in

antagonism but are interdependent at the level of self and cognition as well as overt behavior. (p. 147)

Although distinguishing between *is* and *ought* norms may be important for some theories and domains of research (e.g., Cialdini et al., 1990), I am inclined to agree with Turner (1991) in describing relationship norm strength (and later, its initial theoretical framework). I therefore simply refer to ‘norms’ throughout the rest of the paper.

### **Relationships as Social Groups with Norms**

Relationships can be thought of as a type of social group; this conceptualization greatly facilitates a discussion of relationship norms, as scholars have understood norms to be largely specific to the social groups adopting, enforcing, and reinforcing them (Festinger et al., 1950; Sherif et al., 1988). Thus, I consider the normative influence of relationships to be distinct—though likely related to—normative influence from the broader culture in which relationships are embedded (Simon & Gagnon, 1986). After presenting a brief conceptual argument for considering relationships as groups, I will then discuss some of the relationship domains for which norms have been studied, particularly in terms of how normative content impacts relationships.

### **Relationships as Social Groups**

Some scholars, most notably Moreland and his colleagues, would resist my conceptualization of relationships as social groups (Levine & Moreland, 2006; Moreland, 2010; Moreland, Hogg, & Hains, 1994). They argue that dyads, and therefore (most) relationships are too emotional, ephemeral, and simple to be considered bona fide social groups. Moreland (2010) also submitted that dyads are not groups, if for no other reason than because they are studied by different researchers with distinct theories, methods and dissemination outlets.

Not all agree with Moreland's (2010) position dyads lacking "groupiness" (see Williams, 2010, for a rebuttal). In direct response to Moreland's concerns, it is true that some relationships, such as one night stands (Wentland & Reissing, 2011), are quite ephemeral, but then so too are the minimal groups used in so many lab studies of group dynamics (Asch, 1951; Sherif, 1936; Tajfel, Flament, Billig, & Bundy, 1971). And though relationships clearly entail strong emotional processes (e.g., Mikulincer & Shaver, 2007), strong emotional experiences such as those involved in love (polyamory; Klesse, 2006), sex (group-sex; Bartell, 1970), and hate (out-group prejudice; Allport, 1954) can and do occur within larger groups. Such larger groups may enable the study of some group processes that are not possible with dyads (e.g., coalition formation; Moreland, 2010), but that seems hardly sufficient cause to throw the baby out with the bathwater.

Relationships and larger groups are, in fact, studied by largely separated camps of researchers hailing from differing theoretical and methodical paradigms (Moreland, 2010), but this need not be the case. Indeed, relationships appear to meet many of the previously applied criteria for "groupiness", such as engaging in frequent interaction, sharing a group identity, pursuing collective goals, and many others (see Cartwright & Zander, 1953, for a review), and are perceived by others as being a social group (Lickel et al., 2000). Members of relationships and larger groups also demonstrate similar cognitive biases, such as by evaluating their relationship/group more positively than others (e.g., Rusbult, Van Lange, Wildschut, Yovetich, & Verette, 2000; Sherif et al., 1988; Tajfel & Turner, 1986; Van Lange & Rusbult, 1995; Van Lange, Rusbult, Goossens, Görts, & Stalpers, 1999), even though these evaluations are not necessarily accurate (see Gagné & Lydon, 2004). Finally, relationships and groups are occasionally studied using identical theoretical and methodological approaches, such as in the

case of understanding both relationships and groups from an attachment theory perspective (for relationships, see Fraley & Davis, 1997; Mikulincer & Shaver, 2007a; for larger groups, see Smith, Murphy, & Coats 1999; Swann, Jetten, Gómez, Whitehouse, & Bastian, 2012).

This is all to say that it appears as though the psychological study of relationships and larger social groups would be considerably enriched by conceptual, methodological, and theoretical exchanges between the camps of scholars studying them. In the case of the present paper, for example, I am arguing that the study of relationships can be bolstered through a greater understanding of the norms constructed and employed in relationships (Simon & Gagnon, 1986).

Some researchers have considered relationship norms, but this limited body of work is characterized by a focus on the *content* (i.e., the particular prescriptions and proscriptions) of relationship norms. Thus, before continuing with a discussion of the importance of relationship norm strength, I will first review some of what is known about the content of relationship norms.

### **Content of Relationship Norms**

Romantic couples create norms to govern their conduct in a number of relational domains; an exhaustive review of descriptions for possible relationship norms is beyond the scope of this paper. However, some of the more prominent domains of relationships norms are those pertaining to: gendered sexual roles and behavior within the relationship (e.g., Sakaluk et al., 2013; Epstein, Calzo, Smiller, & Ward, 2009); sexual or romantic exclusivity (e.g., Conley, Ziegler, Moors, Matsick, & Valentine, 2013); topics of conversation between partners (e.g., Anderson, Kunkel, & Dennis, 2011; Baxter & Wilmot, 1985); levels of disclosure between partners (e.g., Roggensack & Silars, 2013) or to others outside the relationship (e.g., Dindia & Allen, 1992); the use of social media in relationships (e.g., Muise, Christofides, & Desmarais,



2009; Saslow, Muise, Impett, & Dubin, 2012), parenting (e.g., Amato, 1994), and the division of labor (e.g., Coltrane & Shih, 2010).

The most extensively studied relationship norm, however, hails from Clark and colleagues' program of research on norms for benefit giving in relationships (Clark & Mills, 1979). According to this research, relationships vary with respect to what extent they employ *exchange* v. *communal* norms for benefit giving. Relationships in which an *exchange* norm are present are those in which partners stress a tit-for-tat strategy of reciprocity; if one partner, for example, buys dinner for the other, the other partner would be seen as indebted, and expected to return the favor next time. Relationships in which a *communal* norm is present, conversely, involve partners giving assistance to one another on the basis of need, without the expectation that this assistance will be returned. Thus, if the same relationship were to instead adopt a communal norm, one partner might consistently purchase dinner for the other, and never expect this assistance to be repaid, if the one partner makes consistently more money than the other.

The adherence to a communal norm of benefit giving (v. an exchange norm) has been associated with a number of advantages for relationships. To name a few, partners in relationships in which a communal norm is in place, for example, pay more consistent attention to each other's needs (Clark, Mills, & Powell, 1986), feel exploited by their partners less frequently (Clark & Waddell, 1985), and are more willing to express emotions—especially those related to feelings of vulnerability (Clark & Finkel, 2005). More recently, Muise and her colleagues have demonstrated that couples adopting a communal norm regarding engaging in sex, specifically, feel more committed, satisfied, and desiring of sex (Muise & Impett, 2015; Muise, Impett, Kogan, & Desmarais, 2013).

Early examinations of exchange and communal norms (Clark & Mills, 1993; Mills & Clark, 1982) attempted to distinguish between the ostensible assessments of what norms are in place (e.g., communal orientation, see Clark, Ouellette, Powell, & Milberg, 1987), and how strong those norms are (e.g., communal strength, Mills, Clark, Ford, & Johnson, 2004) in a particular relationship. However, measures of communal orientation refer to other people, broadly defined (e.g., “It bothers me when other people neglect my needs”, Clark et al., 1987, p. 96), instead of focusing on assessing the norms in a particular relationship. Further, measures of communal strength (Mills et al., 2004) assess the extent to which individuals would go to satisfy the communal norms in of their relationship (e.g., “How far would you go out of your way to do something for \_\_\_\_\_?” p. 217), but this is more likely a motivational byproduct of strong norms, as opposed to assessment of norm strength *per se*.

### **From Norm Content to Norm Strength**

Relationship norm content is clearly important—as evidenced by the numerous benefits associated with the adoption of communal norms (e.g., Clark & Finkel, 2005; Muise & Impett, 2015). Nevertheless, the study of relationship norms would be benefited by an understanding of the importance of the *strength* of relationship norms, to compliment what is already known about relationship norm *content*.

How are scholars to know whether norms in a given relationship (or at other levels of social organization) are strong or weak? If norms produce uniformity among group members, then one can simply look at the level of conformity between group members to those norms, and further, the extent to which those norms are enforced. Thus, in the Festingerian tradition (Festinger et al., 1950), I define strong norms as those that produce more conformity, and for which deviance from those norms is met with greater punishment. In other words, strong norms should restrict individual behavior (Mischel, 1973), and deviance from the prescribed norm of

conduct should be tolerated less. This definition of norm strength, however, invokes a lofty standard of behavioral evidence. In the context of relationships, it would very likely prove difficult—if not impossible—to observe particular relationship behaviors (e.g., sexual interactions between partners) and simultaneously verify whether that individual's actions were truly influenced by his/her partner. Thus, I operationalize strong norms in terms of greater *perceptions* that there are norms in the relationship, that there is pressure to conform to those norms, and that deviance would be met with punishment.

Though new to relationship science, theory and research on the strength of norms has emerged in scholarship on other levels of social organization. Before describing my model of relationship norm strength, I will therefore first review the related concepts *tightness-looseness* (Pelto, 1968; Triandis, 1989) and *situational strength* (Mischel, 1973), and theory and research on the determinants of norm strength more generally.

### **Norm Strength at Other Levels of Social Organization**

The concept of tightness-looseness was first introduced by the anthropologist Pelto (1968), imported to psychological theory by Triandis (1984, 1994, 1996, 2004), and studied by Gelfand and her colleagues (Gelfand et al., 2011; Gelfand, Nishii, & Raver, 2006; Harrington & Gelfand, 2014). Tightness-looseness represents the strength of norms and sanctioning for deviance in a given culture or society. Japan, for example, is a prototypically tight nation, in which there are many rules to abide by, and seemingly trivial deviation from these norms (e.g., a student arriving to class a few minutes late) can result in severe punitive action (e.g., having the door literally slammed on his/her head; Triandis, 1994). The United States, by comparison, is a loose culture, in which there is a relatively greater tolerance of deviance, which is afforded by a lack of strong consensus on what is considered appropriate individual conduct. The empirical investigation of tightness-looseness is still in its relative infancy, though Gelfand and her

colleagues have explored differences in tightness-looseness between countries (Gelfand et al., 2011) and the 50 United States (Harrington & Gelfand, 2014).

Organizational psychologists (e.g., Meyer, Dalal, & Hermida, 2010), similarly, have characterized the behavior settings of the work place on a continuum of *situational strength* (i.e., *strong* to *weak* situations) (Mischel, 1973), which refers to “implicit or explicit cues provided by external entities regarding the desirability of potential behaviors.” (Meyer et al., 2010, p. 122) Weak situations (e.g., a park, or a sidewalk) are those in which there are ambiguous or unclear expectations of how an individual should act, whereas strong situations provide unambiguous norms for appropriate conduct (e.g., a movie theatre, or a judicial court). Individuals in weak situations, therefore, would feel free to engage in a more diverse array of conduct, whereas individuals in strong situations would feel normative pressure to conform to the more narrow array of expected conduct in that context, or otherwise face some form of social punishment (Meyer et al., 2010; Mischel, 1973).

I suspect that tightness-looseness, situational strength, and relationship norm strength are essentially the same phenomenon, working at different levels of social ecology (Bronfenbrenner, 1977). In conceptualizing relationship norm strength, and theorizing about its causes and consequences, I have therefore drawn heavily on the literatures of tightness-looseness and situational strength in developing a model of the causes and consequences of relationship norm strength.

### **A Model of Relationship Norm Strength**

My proposed model of relationship norm strength is presented in Figure 1. With this model, I suggest two hypotheses regarding relationship norm strength: (1) the *mutual constitution of relationships hypothesis*, and (2) the *norm amplification hypothesis*.

#### **Mutual constitution of relationships.**

The *mutual constitution of relationships hypothesis* commandeers the cultural psychology principle of mutual constitution (Shweder, 1995; see Markus & Kitayama, 2010, for a review). It suggests that relationship norm strength has a reciprocal causal association with a number of individual/psychological, relational, and cultural variables. In other words, relationships—and therefore relationship norms—shape and are shaped by the individuals that inhabit them, and the cultural ecologies in which they are nested.

The social influence and tightness-looseness literatures suggest a number of plausible causes and consequences of relationship norm strength. Classic and contemporary social influence theory, for example, offers the desire to affiliate as a likely cause and outcome of relationship norm strength, suggesting that individuals should be more strongly influenced by groups they are attracted to (Festinger et al., 1950), or by individuals with whom they are motivated to be/stay close (Hardin & Conley, 2001). Studies regarding the social tuning hypothesis of shared reality theory (see Hardin & Conley, 2001, for a review), for example, have consistently demonstrated that individuals are willing to adopt the stereotypes and prejudices of others, to the extent that they like and desire increased interaction with these others (Sinclair, Huntsinger, Skorinko, & Hardin, 2005; Sinclair, Lowery, Hardin, & Colangelo, 2005). Thus, relationships that are more attractive may promote greater relationship norm strength. In turn, higher levels of relationship norm strength may heighten the attractiveness of people's relationships. This reciprocal causal process between relationship norm strength and indicators of relationship attractiveness (i.e., affiliative motivation), operationalized in a number of different ways, is the primary phenomenon under investigation in this dissertation.

The tightness-looseness literature suggests a number of other promising determinants and outcomes of relationship norm strength. As tightness-looseness characterizes the strength of

norms of large groups (e.g., entire cultures; Gelfand et al., 2011), and I have suggested that relationships are small groups, I have essentially derived the relationship-level equivalents of many of the large group variables that are theorized to shape and be shaped by tightness-looseness. Triandis (1989, 1994, 2004), for example, repeatedly mentioned a likely association between in-group homogeneity and tight norms. When group members are similar, it is more likely that there will be consensus on what is (im)proper conduct, thereby making it easier to legitimately sanction group member deviance. At the level of relationship, this “in-group homogeneity” would seemingly translate to whether partners are similar to one another—particularly with respect to their beliefs and values about relationships (Byrne, 1961). Thus, partners who share more in common, especially in terms of relationship beliefs, will likely have stronger relationship norms. Stronger relationship norms, subsequently, should help to make relationship partners similar to one another by bringing them closer into uniformity (Festinger et al., 1950).

Another likely determinant of relationship norm is conflict. Societies and states that have a strong history of warfare have been found to exhibit greater levels of tightness (Gelfand et al., 2011; Harrington & Gelfand, 2014). The explanation offered for findings such as these is that such threats demand “a greater need for coordination and adherence to norms to produce greater defensive capabilities”<sup>1</sup> (Harrington & Gelfand, p. 7993). At the relational level, this should translate to an association between relationship norm strength and the frequency of conflict within a relationship. Couples who find themselves in disagreements frequently may do so because the norms of their relationship are insufficiently strong; establishing strong norms may

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<sup>1</sup> Though this line of theorizing was primarily intended for external threats (i.e., between-nation warfare), Harrington & Gelfand offer the Civil War as an example, as they found that states in the South currently have tighter norms than states in the North which suggests that conflicts within larger groups can also lead to stronger norms.

therefore help to decrease the frequency of conflict as partners derive a greater sense of what is expected of them individually and collectively.

As a final example, tightness has been found to occur in states with larger rural populations (Harrington & Gelfand, 2014). Triandis (1994) suggested that agricultural communities might require tighter norms in order to sufficiently organize the collective action necessary to achieve a group's goal. At the level of relationships, this theorizing suggests that couples who pursue larger collective goals (e.g., buying a house together, getting married), or share larger collective responsibilities (e.g., financial obligations or children) should demand stronger norms in order to ensure they are on the 'same page', so to speak. Stronger norms, in turn, should facilitate couples pursuing larger collective goals.

#### **Norm amplification.**

The *norm amplification hypothesis* suggests that relationship norm strength moderates the association between norm content, and a relationship partner's norm-related conduct, as well as their partner's evaluations of that conduct. Simply stated, relationship partners will be more likely to behaviorally comply with the norms of their relationship when these norms are stronger, than when they are weaker. Further, a partner's reaction to their partner's deviance from relationship norms will be more substantively punitive when the norm broken is stronger than when a weaker norm is broken.

Classic scholarship in social influence provide a number of insights into the factors that contribute to norm compliance, while simultaneously providing conceptual support for *norm amplification* dynamics. Norms, for example, appear to be more strongly followed when they are coherent (Asch, 1951, 1956; Kray & Gelfand, 2009; Milgram, 1974), that is, consistent, cognitively manageable, and understandable. Thus, when norms lack manageability, they may not be followed because individuals are not sure what is expected of them (e.g., as in the case of

the conflicting orders from authority figures in Milgram, 1974), or because ambiguity of norms affords plausible deniability when norm violations are more deliberate (e.g., as in the case of aversive racism, Gaertner & Dovidio, 1986).

Norms also appear to be stronger when there is agreement and consensus among group members regarding what norms ought to be in place (e.g., Triandis, 1989), and when norms are otherwise evaluated positively. This point is highly intuitive rather than profound; there is considerable evidence that individuals are inclined to act in ways that they evaluate to be favorable (Ajzen, 1991; Fishbein & Ajzen, 1991).

Norms that are explicitly and clearly communicated also appear to have more influence on an individual's behavior than expectations for conduct that are weakly communicated, subtly implied, or not communicated at all. At the point in Milgram's (1974) classic study on obedience, for example, although most people obeyed the experimenter, those who were inclined to disobey did so most frequently after the learners made their desires to stop the experiment indisputably clear (Burger, 2009). Latané and Darley's (1969) pioneering scholarship on the bystander effect also indirectly supports the role of explicit communication in increasing conformity by strengthening norms. Their findings suggest that if one is in crisis, an effective strategy to ensure that help is provided is to single out a bystander and clearly communicate distress and the need for help (Darley & Latané, 1968). Research on outcomes of attempted sexual assault further supports the role of explicit communication in strengthening norms, as rapes are less likely to be completed when victims scream, yell, and/or attempt to fight off their assailants compared to more passive strategies (Ullman, 2007). Put more generally, norms that are explicitly stated and called upon are binding, but norms—even as basic and pervasive as “do no harm to others”—that are subtly hinted at or not articulated at all, are vulnerable to deviance.



Finally, norms appear to be strong when individuals perceive punishment for deviance as sufficiently likely and aversive. This perspective is similar to the hypothesized role of health threat advanced by health behavior model theorists (Rosenstock, 1974). As individuals will take health-relevant action only when they feel susceptible to disease and consider the consequences of getting the disease to be aversive, so too will individuals conform to their partner's desires only when they think their partner is likely to punish deviant behavior, and when the form of punishment is sufficiently dissuasive. There are a variety of forms of punishment that could be levied by relationship partners, for deviance from relationship norms. Individuals could employ any of the following tactics, or others not mentioned here: withholding affection (e.g., Carton & Horan, 2014), withholding sex (e.g., Watts, Keogh, Ndlovu, & Kwaramba, 1998), expressing anger (e.g., Fehr, Baldwin, Collins, Patterson, & Benditt, 1999), engaging in some form of emotional or physical relational aggression (e.g., Linder, Crick, & Collins, 2002), intentionally provoking jealousy (e.g., White, 1980), engaging in infidelity (e.g., Blow & Hartnett, 2005), and/or finally, relationship dissolution (e.g., Collins & Gillath, 2012). Importantly, neither instances of actual deviance, nor actual enactment of punishment responses are necessary to encourage conformity to relationship norms. Relationship partners may be implicitly aware of punishment contingencies (e.g., breakup is likely if infidelity occurs), or have these contingencies explicitly communicated to them (which, following the arguments of norm communication should make them more persuasive). Similarly, partners will likely be dissuaded from deviance simply by the threat of possible punishments, rather than requiring first-hand experience with punishment *per se*.

**Distinguishing the relationship norm strength model from other relationship theories.**

Other theoretical accounts of close relationships—including interdependence theory (Kelley & Thibaut, 1978), and the ideal standards model (Simpson, Fletcher, & Campbell, 2001)—may seem to account for the processes I have attempted to explain with my relationship norm strength model. I argue, however, that there are crucial differences between these theories and my own, and maintain that my relationship norm strength model fills a unique and important theoretical gap in the close relationships literature.

***Interdependence theory.***

Interdependence theory was first proposed as an account of group processes, and later emerged as one of the most comprehensive and prominent theories of close relationships (see Rusbult & Arriaga, 1997; Rusbult & Van Lange, 2003, for more recent reviews). Interdependence theory attempts to explain the interplay between: (1) the benefits individuals perceive they are deriving from being in a relationship, compared to; (2) the benefits they have come to expect from being in a relationship; and (3) the benefits they perceive to be possibly attainable from alternative relationship partners. When individuals perceive that they are deriving greater benefits from their current relationship compared to what they have come to expect from relationships, they will feel a sense of relationship satisfaction; when an individual perceives that the relational benefits they are deriving fall short of their expectations, conversely, they will feel dissatisfied (Rusbult & Arriaga, 1997). Further, to the extent that an individual feels that the benefits of their current relationship exceed those that would be possible by entering into a relationship with an alternative partner, they will remain committed to their current relationship.

Numerous differences, both small and large, distinguish between interdependence theory and my model of relationship norm strength. The biggest difference between these accounts is the theorized importance of norms for relationship functioning. In my model of relationship norm strength, I theorize that the strength of relationship norms plays a central role in the

experience of satisfaction, conflict, collective goal pursuit, and a number of other relationship processes. For interdependence theory, alternatively, the discussion of norms centers around their content, and norms are relegated to the role of “distal variables [that] color the proximal events accompanying an interaction by influencing event-specific cognition and emotion, leading the individual toward one of several transformations...” (Rusbult & Arriaga, 1997, p. 236). In my model norm strength is a proximal cause and consequence of relationship functioning.

Other, more nuanced differences also set my model of relationship norms strength apart from interdependence theory. Interdependence theory principles, for example, appear to cut across levels of social organization (Kelley & Thibaut, 1978), whereas my model is more explicitly hierarchical. In other words, my relationship norm strength model clearly demarcates the reciprocal causal influences of relationship norm strength on individual, relational, and ecological variables. Also, whereas I consider relationship satisfaction and commitment as manifestations of the same higher-order latent construct—relationship quality—interdependence theory sees these variables as more distinctly independent (Rusbult & Arriaga, 1997). Finally, the social comparison processes that are so central to interdependence theory (Festinger, 1954) are completely absent in my model of relationship norm strength.

There are, however, some similarities between my model of relationship norm strength and interdependence theory. As interdependence theory recognizes mutuality of dependence as an important determinant of relational outcomes (Rusbult & Arriaga, 1997), to the same end, I recognize the mutuality of relationship norms as an important source of their strength. That is, relationship norms will be more frequently abided, and their benefits realized, when *both* partners feel some sense of autonomy in their negotiation, and therefore agree on their enactment. I also see increased relationship norm strength as one among the many possible

consequences of greater dependence. And though my model of relationship norm strength is not reliant on social comparison dynamics (Festinger, 1954), it could be the case that individuals use levels of relationship norm strength as a basis, among others, for comparing between current and alternative relationships, based on their own individual preferences (Rusbult & Arriaga, 1997).

***Ideal standards model.***

The ideal standards model (ISM; Simpson, Fletcher, & Campbell, 2001) combines the social comparison dynamics of interdependence theory (Kelley & Thibaut, 1978), with concepts from self-discrepancy theory (Higgins, 1987). Specifically, the ISM posits that members of a couple compare themselves, their partner, and their relationship, against ideals they have for each target (i.e., their ideal self, ideal partner, and ideal relationship; see Campbell & Fletcher, 2015; Campbell, Pink, & Stanton, 2015; Fletcher & Simpson, 2000). The ISM further specifies three particular domains of importance, inspired by evolutionary theories of close relationships (Gangestad & Simpson, 2000), when individuals compare current partners and relationships against their idealized versions of these targets: (1) warmth, commitment, and intimacy; (2) health, passion, and attractiveness; and (3) status and resources. Thus, ISM is situated to offer a more content-specific account of relational social comparison, compared to interdependence theory, while also providing an account of ideal standards that is expanded beyond the self (Simpson, Fletcher, & Campbell, 2001).<sup>2</sup>

Two major differences set my model of relationship norm strength apart from the ISM. First, as with the contrast between my model and interdependence theory (Kelley & Thibaut, 1978), my model lacks the social comparative focus that so heavily underlies the ISM (Simpson, Fletcher, & Campbell, 2001). Moreover, whereas interdependence theory leaves open the

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<sup>2</sup> Another important difference between the ISM and self-discrepancy theory is that the ISM does not distinguish between ideal and ought standards.

possibility that individuals may use relationship norm strength as a basis of relational comparison, the ISM is quite clear about the domains in which such important social comparisons will occur, and relationship norm strength is not one of them. Indeed, the ISM maintains a strong evolutionary focus that is completely absent in my model of relationship norm strength. Thus, while the ISM might be able to partially address relationship norms, and their strength, in domains that are laden with evolutionary underpinnings, my model is much more accommodating of any and all relationship norms, regardless of their evolutionary or cultural origins.

The closest concept to relationship norm strength in the ISM, is the so-called flexibility of ideal standards (Simpson, Fletcher, & Campbell, 2001). That is, to what extent can an individual, their partner, or their joint relationship fall below an individual's associated ideal standard for that target, while still being considered acceptable to the individual? Assuming equal interest and power in a relationship, relationship norms might be negotiated as a guide for relationship partners striving to become their idealized selves and relationship; stronger norms would demand greater compliance with idealized standards. However, in this case, though the flexibility or rigidity of relationship ideals is reminiscent of norm strength, these ideas are exclusively limited to domains of evolutionary significance. And further, the ISM does not provide clear predictions of the effects of ideals when ideals are not mutually shared or applied—as in the case of relationships with power and interest disparities. As I have suggested consistency and agreement as varieties of relationship norm strength, my relationship norm strength model, conversely, anticipates that such one-sided ideals would have to be employed more flexibility.

### **Overview of the Present Studies**

In the dissertation I present the results of five studies in which I tested aspects of both *mutual constitution of relationships* and *norm amplification hypotheses*. I primarily focus on testing the *mutual constitution of relationships hypothesis* with respect to the reciprocal causal association between relationship norm strength (RNS) and affiliative motivation (Festinger et al., 1950; Hardin & Conley, 2001), and along the way, developing a multidimensional measure of RNS. At a general level, I predicted that RNS would be associated with greater affiliative motivation in relationships. This prediction was evaluated with a number of operationalizations of affiliative motivation, including relationship type (some relationships are more or less attractive than other; Studies 1 and 2), and relationship quality (Studies 2-5).<sup>3</sup> This prediction was also evaluated with a number of different study designs, including quasi-experimental/correlational (Studies 1-3), dyadic (Study 3), and experimental approaches (Studies 4 and 5). In keeping with the mutual constitution principle, I predicted and evaluated both the causal influence of indicators of affiliative motivation on RNS (Study 4), and of RNS on indicators of affiliative motivation (Study 5).

In each of the five studies, I also examined associations between RNS and a number of other variables that I have theorized to be likely correlates of RNS. Specifically, I evaluated associations between RNS and perceived romantic partner similarity (Study 2), levels of asset and responsibility sharing between partners (Studies 2, 4, and 5), and conflict between partners (Studies 4 and 5). As already discussed, based on previous theorizing and empirical findings from the tightness-looseness literature (e.g., Gelfand et al., 2011; Harrington & Gelfand, 2014; Triandis, 1989, 1994, 1996, 2004), these qualities were expected to be positively associated with RNS.

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<sup>3</sup> The chronological order in which I conducted the studies was Study 1, Study 2, Study 4, Study 3, and Study 5.

Finally, in Study 3, I conducted a preliminary test of the *norm amplification hypothesis*, in a study of romantic couples. I predicted that partners would rate their own and their partner's conduct as more adherent to the norms of their relationship, when the norms of their relationship were described as stronger.

### Study 1

One way that relationship partners may express their desire to affiliate with one another (Hardin & Conley, 2001) is through the pursuit of particular types of sexual relationships. Though many individuals pursue fulfillment of their sexual needs within the context of an exclusive long-term relationship, this is not always the case. Indeed, research on the forms that casual sex relationships take has burgeoned in the last decade, revealing a diverse array of arrangements (see Bisson & Levine, 2009; Grello, Welsh, & Harper, 2006; Wentland & Reissing, 2011, for examples).

Sexual relationship types likely differ in many ways, and are therefore a 'dirty', complicated construct to study. Even so, they are naturally occurring forms of relational organization, and according to formative work by Wentland and Reissing (2011), differ in a few important respects. Most importantly, for the present investigation, relationship types appear to differ in terms of various indicators of affiliative motivation (Hardin & Conley, 2001), such as frequency of contact, type of contact (i.e., exclusively sexual, or both sexual and social), level of personal disclosure (Wentland & Reissing, 2011), and various indicators of relationship quality (e.g., commitment, trust, intimacy; Fletcher, Simpson, & Thomas, 2000). One-night stands, for example, are deliberately arranged to last but a single sexual encounter, whereas "friends with benefits" involve some level of commitment, as partners engage in repeated sexual and social encounters, and personally disclose to one another. Relationship types, therefore, might differ not

only in terms of the content of norms that are in place, but also in terms of how strong these norms are.

In the first study of RNS, I examined individual perceptions of RNS across four different relationship types, ranging from the most short-term and shallow (i.e., one-night stands) to the most long-term and involved (i.e., long-term exclusive romantic relationships). I predicted that relationship types typically entailing lesser levels of continuous involvement (e.g., one-night stands and ongoing casual sex relationships) would be perceived as having weaker norms than relationship types entailing greater levels of commitment (e.g., exclusive romantic relationship types).

## **Method**

### **Participants and procedure.**

I recruited a convenience sample of 100 participants (50 female;  $M_{\text{age}} = 30.65$ ,  $SD = 11.08$ ), using Amazon's Mechanical Turk (MTurk; see Buhrmester, Kwang, & Gosling, 2011, for a review). Most participants identified as heterosexual (89.00%) and were dating one person exclusively (26.00%), cohabiting with a romantic partner (19.00%), or not dating anyone (18.00%). Finally, the vast majority of participants ethnically identified as European American (86.00%), followed by Asian American (10.00%), African American (6.00%), and Hispanic American (6.00%).

After completing a brief demographic survey (see Appendix) and some personality measures not reported here, participants rated the perceived strength of norms in four types of sexual relationships (one night stands, ongoing casual sex relationships, new exclusive romantic relationships, and established exclusive romantic relationships); the order of relationships to rate



was randomized to dissipate the influence of order effects. Participants were then debriefed and paid \$0.50 for their time.

### **Measures.**

As Study 1 constituted the first empirical examination of RNS, there was not yet an established measure of this construct to use. I therefore adapted Gelfand and colleagues' (2011) measure of the conceptually similar cultural tightness-looseness construct—the strength of norms in societies. The measure (see Appendix A1 for Study 1 materials) consisted of six items on which participants were asked to indicate their perceptions of the strength of norms for engaging in sexual behavior within each of the four relationship types. Participants made their responses to the items (e.g., “In this situation [a one night stand], if someone acts in an inappropriate way, their partner will strongly disapprove.”) on a 6-point rating scale (1 = *strongly disagree*, 6 = *strongly agree*). Items were averaged within a relationship type to yield four aggregate indexes of perceived RNS, with higher values indicating perceptions of stronger norms for that particular relationship type. The reliabilities of the perceived RNS index for one-night stands, ongoing casual sex relationships, new exclusive relationships, and established exclusive relationships ranged from somewhat below acceptable to acceptable levels ( $\alpha$ s = .79, .65, .78, and .74, respectively).

### **Data Analysis Strategy.**

As the study was a four-level within-subject design, I conducted a one-way repeated measures analysis of variance (ANOVA) using the Greenhouse-Geisser correction, to compare perceptions of RNS in the four different relationship types. Further, I conducted pairwise comparisons of relationship types using a Bonferroni adjustment (Maxwell & Delaney, 2004). I computed standardized mean difference effect sizes for these dependent pairwise comparisons

(i.e., Cohen's  $d$ ), and other pairwise comparisons throughout this dissertation, using the calculators provided by Lakens (2013).

## Results

The repeated measures ANOVA revealed a significant omnibus difference in perceptions of RNS between the four relationship types,  $F(2.193, 297) = 7.35, p = .001, \eta_p^2 = .07$ . Violin plots of relationship norm strength scores for the different relationship types are presented in Figure 1; these plots and all other figures *not* depicting models of latent variables were created using the *ggplot2* package (Wickham, 2009). Violin plots show mean levels of relationship norm strength, response variability (quartiles), and response distribution (mirrored on either side of the box-and-whiskers plot). Pairwise comparisons revealed that participants perceived one night stands as entailing weaker norms than new exclusive relationships (95% CI:  $-.74, -.02, d = -.29$ ) and established exclusive relationships (95% CI:  $-.92, -.13, d = -.36$ ). Participants also perceived ongoing casual sex relationships as entailing weaker norms than established exclusive relationships (95% CI:  $-.53, -.02, d = -.27$ ). The remaining differences between perceptions of norm strength in one night stands v. ongoing casual sex relationships (95% CI:  $-.55, .04, d = -.23$ ), ongoing casual sex relationships v. new exclusive relationships (95% CI:  $-.42, .17, d = -.11$ ), and new exclusive relationships v. established exclusive relationships (95% CI:  $-.08, .37, d = -.17$ ), were non-significant.

## Discussion

The results of Study 1 generally supported the hypothesized association between RNS and relationship types. Specifically, relationship types stereotypically characterized by lesser affiliation motivation (e.g., one-night stands) were perceived as entailing weaker norms than

relationship types stereotypically characterized by higher amounts of affiliation motivation (e.g., long-term exclusive relationships).

Though promising, the initial findings from Study 1 must be interpreted cautiously, in light of three important limitations. First, Study 1 was limited to the assessment of *perceptions* of RNS in the four investigated relationship types; it is possible that actual *experiences* of RNS in these relationship types are quite different than was expected by participants. Relatedly, though I have suggested that differing levels of relationship quality, which might make the four investigated relationship types more or less attractive to individuals, underlie the differences in perceived RNS, this process was not tested explicitly. In other words, relationship types might differ with respect to RNS not because of differences in relationship quality indexes, but rather, because of some other relational variable(s). It is also possible that the within-subjects design of Study 1 may have encouraged participants to increasingly differentiate between relationship types. Finally, the measure of RNS, adapted from Gelfand and colleagues' (2011) measure of tightness-looseness, exhibited suspect reliability in Study 1. And in a subsequent study, not reported herein, the reliability of this adapted measure once again fell below acceptable levels ( $\alpha = .63$ ). Thus, although conceptually similar to tightness-looseness, I suspected that RNS might require a more sophisticated and multidimensional instrument to assess in future studies.

## Study 2

The purpose of Study 2 was fourfold, and amounted to addressing the limitations of Study 1. First, in Study 2 I sought to recruit samples of individuals who were actually in the relationship types previously studied, in order to assess their experienced—as opposed to perceived—levels of relationship norm strength. Further, in Study 2, I assessed participants' rating of relationship quality, so that I could examine the association between relationship quality

and RNS directly, as well as compare relationship types on both variables. The between-subjects design of this study would also ensure that participants would not be pressured to artificially differentiate one relationship type from another, because they would only be reporting on their experiences of one of the particular relationship types. I also developed a new multidimensional measure of RNS that I piloted in Study 2, which was based on discussions of norm strength in other literatures (e.g., situational strength; Meyer et al., 2010). Finally, I tested secondary hypotheses regarding the association between RNS and ratings of relationship partner similarity and levels of shared assets (e.g., money, property) and responsibilities (e.g., children).

I predicted that the perceptions of differences in RNS between relationship types would largely carry over to experiences of these relationship types, such that individuals in relationship types entailing greater affiliative motivation (e.g., long-term exclusive relationships) would report greater levels of RNS factors. I further predicted that RNS would mediate differences between relationship types and ratings of relationship quality, with RNS factors being positively associated with relationship quality. In the course of testing this prediction, however, I also evaluated whether, as the *mutual constitution of relationships hypothesis* would suggest, the converse pattern of mediation was plausible—that is, whether relationship quality would mediate relationship type differences in RNS.

Regarding the secondary hypothesis pertaining to similarity, I predicted that RNS would be positively associated with ratings of similarity and levels of asset/responsibility sharing between partners. These predictions were based on early writings of social norms, in general, and tightness-looseness, specifically. Triandis (1989, 1994, 2004), for example, theorized that stronger norms should be found in homogenous societies (e.g., Japan), compared to more diverse societies (e.g., the United States). Likewise, Festinger and colleagues (1950) theorized that

norms functioned in part to bring group members into closer uniformity with one another on issues important to group conduct. Thus, similarity with respect to beliefs about relationships and sexuality may be more strongly associated with RNS, though distinguishing between general and sex/relationship similarity was more of an exploratory research question.

Finally, I predicted that relationships sharing greater levels of assets and responsibilities would reporter greater RNS. This prediction is similar to expecting agricultural communities to have tighter norms compared to communities that do not heavily rely on agriculture (see Pelto, 1968; Triandis, 1994). When the wellbeing of the group is contingent on shared resources (e.g., farmland) that require collective action to maintain (i.e., farming is not a one-person job), norms will need to be stronger to structure and thereby facilitate this collective action. Along conceptually similar lines, partners sharing bank accounts, mortgages, childrearing responsibilities and the like, should require stronger norms to successfully navigate this level of collective cooperation.

## **Method**

### **Participants and procedure.**

I recruited a sample of 312 adults (140 female;  $M_{\text{age}} = 29.52$ ,  $SD = 9.12$ ), again using Amazon's MTurk (Buhrmester et al., 2011). Through four different postings on MTurk, I requested the participation of individuals who were currently in (or in the case of one-night stands, recently had [within two weeks of participation]) one of the relationship types examined in Study 1. In total, I was able to recruit 77 individuals who had recently experienced a one-night stand, 79 who were currently in an ongoing casual sex relationship, 78 who were currently in a newly formed exclusive romantic relationship, and 78 who were currently in a long-term

established exclusive romantic relationship.<sup>4</sup> Most of the total sample identified as heterosexual (81.90%), with smaller numbers of gay/lesbian (7.70%), bisexual (9.00%) and asexual/other (1.30%) identified participants. Likewise, most of the sample racially identified as White/Caucasian (73.20%), followed by Black/African-American (9.00%), Hispanic/Latino/Latina (7.70%), Asian (6.80%), or some other racial group (3.20%).

Upon accessing the online survey, participants first indicated in what type of relationship they were currently involved. Beyond the four relationship types already mentioned, participants were also able to select “a combination of two or more of the descriptions above”, or “other (please specify)”; individuals selecting either of these types were screened out from the study, thereby preventing them from responding to further survey questions (these individuals were not paid for participation).

After indicating their relationship type, participants responded to a number of questions about their particular relationship type, including those related to similarity and asset/responsibility sharing. Participants then completed a newly developed measure of RNS, followed by an established measure of relationship quality. Afterwards, participants completed a number of basic demographic questions.

At the end of the survey, participants who passed initial screening were asked again to confirm their chosen relationship type. Participants selecting either a different relationship type than what they had originally selected, the “combination” category, or “other” category had their data removed from the sample, though they were still paid for participation. All participants,

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<sup>4</sup> MTurk recruitment postings for each relationship type stated that participants were not allowed to participate in multiple relationship type versions of the survey, and would not be paid multiple times if they did. MTurk identification numbers for participants completing the surveys were compared between the four samples; no duplicates were found. In other words, the four relationship types constitute totally independent samples.

except those that were initially screened from participating in the study at the onset, were paid \$0.50 for their participation.

### **Measures.**

All materials used in Study 2 are presented in the Appendix A2 (as the wording of measures for each relationship type differed to a small extent, only one night stand version of materials is provided). Materials included general relationship questions, a new measure of RNS, an established measure of relationship quality, and several demographic items.

#### ***Relationship questions.***

Participants answered a number of secondary questions about their relationship. Many of these questions were not used for analysis, such as when they last engaged in sexual behavior with their partner and what behaviors they engaged in. However, all participants also indicated how similar—both in general, and with respect to beliefs about relationships—they perceived themselves to be to their partner (1 = *not at all similar*, 7 = *very similar*), and the extent to which they shared assets (e.g., money, belongings, property) and responsibilities (e.g., financial, children, pets) with their partner (1 = *none of my assets/responsibilities are shared*, 7 = *almost all my assets/responsibilities are shared*).

#### ***Relationship norm strength questionnaire.***

I developed a new Relationship Norm Strength Questionnaire (RNSQ) to assess multiple dimensions of RNS. I created this ostensibly multidimensional measure because of the poor psychometric performance of the RNS measure used in Study 1, adapted from Gelfand et al.'s (2011) tightness-looseness questionnaire. In total, I drafted 24 items for the new RNSQ, the content for which came from my review of conceptually similar constructs (e.g., tightness-looseness, situational strength; Gelfand et al., 2011; Meyer et al., 2010), as well as descriptions

of norm-based interventions for particular applied problems (e.g., discouraging sexual harassment in the workplace; Maas, Cadinu, & Galdi, 2013). Items assessed a number of features of norms, including clarity, communication, consistency, endorsement, enforcement, salience, and others.

As the concept of a norm is not necessarily one that is intuitive to lay audiences, I asked participants about the “rules” of their relationship, hoping this language would be more accessible and understandable. As with the previous relationship-related questions in Study 2, question content was altered for each relationship type, as needed. To begin, all participants responded to the following open-ended question, to get them thinking about the norms present in their relationship:

*We are interested in learning more about the kind of relationship you have with your relationship partner. In this section of our survey, we are particularly interested in the “rules” that may have been in place in your relationship with your partner, regarding your relationship and sexual conduct. In other words, there may have been things you and/or your partner felt like you were expected to do, or forbidden from doing, in the context of your relationship. Furthermore, these “rules” may have come about because of an explicit conversation between you and your partner, or alternatively, you may have simply assumed they were in place and never actually talked to your partner about them.*

*Please describe some of the “rules” that were in place for your relationship. There may have been “rules” about particular roles you and your partner were expected to take on, how you and your partner should communicate or have sex, or how you should interact with others who are not part of your relationship. For example, in some relationships,*



*there is a “rule” prohibiting relationship partners from having sex with other people, although this “rule” may or may not have been in place in your relationship.*

*Please describe as many of the “rules for your relationship as you can.*

After completing this open-ended question, participants responded to the 24 items developed for the RNSQ, characterizing their relationship using a 7-point scale (1 = *not at all accurate*, 7 = *completely accurate*). As Study 2 constituted the initial use of the RNSQ, its measurement structure was not yet known; at this point of research, there are therefore no particular subscales to report, though some example items include, “I feel like our relationship has a lot of “rules”, “My partner and I agree on the “rules” of our relationship”, and “My partner or I would be punished by the other for breaking one of the “rules” of our relationship” (see Appendix for full text of items).

***Perceived relationship quality components.***

The Perceived Relationship Quality Components (PRQC) Inventory (Fletcher, Simpson, & Thomas, 2000) was used to assess the quality of participants’ relationships. The PRQC assesses six facets of relationship quality via 18 items (3 per factor) rated on a 7-point scale (1 = *not at all*, 7 = *extremely*). The six factors of the PRQC are *satisfaction* (satisfied, content, happy), *commitment* (committed, dedicated, devoted), *intimacy* (intimate, close, connected), *trust* (trust, can count on, dependable), *passion* (passionate, lustful, sexually intense), and *love* (love, adore, cherish), which may be aggregated to form an overall index of relationship *quality*. Higher values indicate a greater amount of the perceived relationship quality component (e.g., more love, passion, satisfaction, etc.).

Item language was modified to be appropriate for participant's indicated relationship type (e.g., "How satisfied were you with your one night stand?" for one-night stands, v. "How satisfied are you with your relationship?" for long-term exclusive relationships). Internal consistency was excellent for each of the six PRQC factors ( $\alpha$ s = .86-.96), and they were all significantly and positively correlated ( $r$ s = .36-.87,  $p$ s < .001). These correlations indicate, as suggested by the initial development of the PRQC (Fletcher et al., 2000) that aggregating the six factors to form a higher-order relationship quality index may be appropriate; the relationship quality index (i.e., average of the six PRQC factors) was also quite reliable ( $\alpha$  = .96).<sup>5</sup>

### **Data Analysis Strategy.**

I first subjected RNSQ data to factor analysis in order to determine an initial and plausible measurement model of relationship norm strength. I then used exploratory structural equation modeling in order to test the hypothesized relationship difference in the strength of norms between relationship types, and the hypothesized associations between relationship norm strength and relationship quality, and to examine the secondary hypothesized associations between relationship norm strength and the similarity and asset/responsibility sharing items.

### ***Exploratory factor analysis.***

The first phase of data analysis consisted of exploratory factor analysis (EFA; see Fabrigar & Wegener, 2012), in order to establish a data-driven measurement model for the RNSQ. In the course of conducting EFA, researchers must make analytic decisions regarding how factors are to be *extracted*, *rotated*, and *retained*; I followed the best practices described by

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<sup>5</sup> I report these reliability coefficients out of respect for convention, however, in truth, they are largely irrelevant because these data were later analyzed using structural equation modeling techniques (i.e., with latent [measurement-error-free] constructs). The PRQC subscales produced similarly high reliabilities, and large positive correlations in all subsequent studies involving latent variable analysis; the aggregate relationship quality index also was highly reliable across these studies. PRQC reliabilities and correlations will therefore no longer be reported in detail.

a number of EFA experts (e.g., Fabrigar & Wegener, 2012; Fabrigar, Wegener, MacCallum, & Strahan, 1999; Preacher & MacCallum, 2003; see Appendix B1 for a full description).

Exploratory factors were *extracted* using maximum-likelihood estimation. This extraction method, compared to other non-common factor (e.g., principle components analysis) and common factor extraction methods (e.g., principle axis factoring), enables significance tests of factor loadings and the calculation of indexes of model fit. Factor loadings were *rotated* using the oblique Geomin technique thereby allowing the estimation of factor correlations. In making factor *retention* decisions, I relied on a combination of information, including results from parallel analysis (Horn, 1965), interpreting descriptive indexes of model fit, conducting nested-model comparisons (Brown, 2006), and evaluating factor interpretability.

Parallel analysis (Horn, 1965) involves comparing the eigenvalues of extracted factors against eigenvalues from randomly simulated factors. Researchers are encouraged to evaluate factor solutions for which extracted factors have larger eigenvalues than their simulated counterparts.

For indexes of model fit, I interpreted the root mean square error of approximation (RMSEA) and the Tucker-Lewis Index (TLI). The RMSEA is an absolute measure of model fit, which indicates how poorly a selected model fits the data compared to a perfect fitting model; values of .08 or less indicate acceptable fit (Hu & Bentler, 1999). The TLI, alternatively, is a relative index of model fit, which indicates how well a model fits the data compared to the worst-possible fitting model (i.e., a null model); values of .90 or higher are generally considered acceptable. These indexes are derived from the  $\chi^2$  statistic, which reflects the discrepancy between the EFA model and the observed data—smaller values indicate better fit. A nested-

model comparison is used to evaluate whether there is a significant decrease in the  $\chi^2$  when additional factors are extracted.

To summarize, I carried out EFA using maximum-likelihood extraction, Geomin (i.e., oblique) rotation, and made factor retention decisions according to parallel analysis, two indexes of model fit (RMSEA and TLI), and nested-model comparisons. Finally, beyond quantitative metrics, I also evaluated whether competing factor solutions rendered conceptually distinct and/or meaningful factors.

### ***Exploratory structural equation modeling.***

The second phase of data analysis consisted of exploratory structural equation modeling (ESEM; see Asparouhov & Muthén, 2009), in order to test the hypothesized relationship type differences in levels of relationship norm strength, the association between relationship norm strength and relationship quality, and other secondary hypotheses about correlates of relationship norm strength.

ESEM is an analysis that inhabits a middle ground between exploratory and confirmatory factor analysis (CFA) models (and thus, traditional structural equation modeling), thereby capitalizing on strengths and avoiding limitations of both approaches (see Appendix B2 for full description). Specifically, ESEM allows the simultaneous modeling of exploratory and confirmatory latent variables, while skirting concerns of rotational indeterminacy for exploratory factors, and biased estimation of factor loadings, residual covariances, and latent correlations for confirmatory factors (Asparouhov & Muthén, 2009).

In Study 2, I therefore specified two groups of ESEMs, using Mplus version 7 (Muthén & Muthén, 2012), in which the four Relationship Norm Strength Questionnaire (RNSQ) factors were estimated with an exploratory model (i.e., essentially replicating the EFA done in the first

phase of data analysis), while estimating the 6 Perceived Relationship Quality Components (PRQC) Inventory factors—for which a strong measurement model is already established (Fletcher et al., 2000)—with a confirmatory model. Given the strong correlations between the PRQC variables, and as suggested by Fletcher and colleagues (2000), a higher-order confirmatory *relationship quality* factor was specified, on which loaded the lower-order PRQC factors (i.e., *satisfaction, commitment, intimacy, trust, passion, and love*). The ESEM parameters were estimated using maximum-likelihood, and the factor loadings for the exploratory model were rotated again using the oblique Geomin method.

ESEMs were evaluated using the following indexes of model fit: the Confirmatory Fit Index (CFI), root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). Conventionally, CFI values above .90 indicate good model fit, whereas RMSEA and SRMR values below .08 indicate good fit (Hu & Bentler, 1999). An exploratory model, however, deliberately introduces a considerable lack of model parsimony, as each item is estimated as an indicator of each factor. As each of these indexes of model fit penalizes models for lacking parsimony, and simulation work has yet to examine what values constitute good fit in the context of deliberately un-parsimonious ESEMs, I therefore adopted somewhat more liberal cutoff values to indicate well-fitting models—above .85 for CFI, and below .10 for RMSEA and SRMR.

The first group of ESEMs tested the primary hypotheses of Study 2, pertaining to relationship type differences in relationship norm strength, and the association between relationship norm strength and quality. To accomplish this, I first created three contrast code variables to partition the between-group variance of the four different relationship types (Cohen, Cohen, West, & Aiken, 2003). The first contrast variable, labeled “ONS”, enabled comparisons

of those in recent one-night stands (coded as .75) to those in one of the other three ongoing relationship types (coded as -.25). The second contrast variable, labeled “Casual”, enabled comparisons of those in ongoing casual sex relationships (coded as .66) to those in one of the two exclusive relationship types (coded as -.33). The final contrast variable, labeled “New”, enabled comparisons of those in a new exclusive romantic relationship (coded as .50) to those in established exclusive romantic relationships (coded as -.50).

An indirect effects model, in which relationship type contrast variables predicted RNSQ exploratory factors, which in turn predicted the confirmatory second-order relationship quality, was first examined (see Figure 3 for the measurement and structural model). Given the correlational nature of these data, however, a second model in which relationship type contrast variables were indirectly associated with RNSQ factors through relationship quality was also evaluated (see Figure 4 for the measurement and structural model).

The indirect effects for both models were tested using the Monte Carlo Method for Assessing Mediation (MCMAM; Preacher & Selig, 2012).<sup>6</sup> The MCMAM is a method of testing indirect effects, in which a distribution for the indirect effect (the *ab* path) is simulated, based on the unstandardized estimates and associated standard errors of the regression paths in the model.

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<sup>6</sup> Though bootstrapping estimates of indirect effects is typically the gold standard of assessing mediation (see Preacher & Hayes, 2004, 2008, for a review), it is not possible in Mplus with exploratory factors. Simulation research, however, has demonstrated that when bootstrapping indirect effect estimates is not possible, the MCMAM is the preference method of testing mediation, as it requires fewer unrealistic assumptions compared to other methods (e.g., Sobel test; Preacher & Selig, 2012).

A large number of random samples are then drawn for the simulated distribution of the  $ab$  path, and a 95% confidence interval can then be created around the sampled values of  $ab$ ; a significant indirect effect is indicated when the value of zero is absent from the confidence interval of  $ab$ .

A final ESEM tested the correlations between exploratory the RNSQ factors and the items related to perceived similarity and asset/responsibility sharing between partners. As these hypotheses did not pertain to relationship quality, the confirmatory measurement model of the PRQC was omitted from this ESEM.

## Results

### **Measurement structure of relationship norm strength questionnaire (EFA).**

I first conducted parallel analysis with maximum-likelihood extracted eigenvalues, in order to determine a plausible range of factor solutions. Parallel analysis was conducted in *R* (R Core Team, 2014), using the *psych* package (Revelle, 2015). Figure 5 presents the scree plot of both observed eigenvalues, and the mean eigenvalues from 50 simulated datasets, which suggested that a maximum of 6 factors should be retained. I then extracted factor solutions from 1-6 using maximum likelihood and Geomin (i.e., oblique) rotation using Mplus (Muthén & Muthén, 2015). Model fit indexes and nested-model comparisons for the 1-6 factor solutions are presented in Table 1; of these six models, only 4-6 factor models appeared to be empirically tenable. A closer examination of these competing models revealed little conceptual gain after the four-factor solution, as the subsequent models appeared to simply further divide the first and largest factor into smaller factors. In other words, neither the fifth nor sixth factor appeared to enhance the theoretical scope of the RNSQ, and therefore, the four-factor solution was retained as the preliminary measurement structure of the RNSQ.

Geomin rotated factor loadings and item communalities for the selected four-factor solution are presented in Table 2, and latent factor correlations are presented in Table 3. Interpreting these tables, the final factor solution I selected appears to entail four relatively distinct factors. Item communalities ranged from .17 to .91; the average communality level ( $M = .55$ ) suggested that a moderate to large amount of variance was explained by the four-factor solution.

The first factor, which I labeled *norm manageability*, is reflected strongly in items related to a sense of being overwhelmed and confused by relationship norms, as well as feeling as though relationship norms are inconsistent; items for this factor should be reverse scored so that values indicate greater manageability. The second factor, which I labeled *norm agreement/endorsement*, is reflected strongly in items related to the individual (and their partner) agreeing with relationship norms, and evaluating them as legitimate. The third factor, which I labeled *norm explicitness*, is primarily reflected in two items, related to whether partners have talked openly about relationship norms, or rather, have assumed they existed instead of discussing them with each other (reverse scored). The final and fourth factor, which I have labeled *anticipated punishment*, is strongly reflected in items related to the likelihood and severity of punishment for deviance from relationship norms.

**Indirect effects models of relationship type, relationship norm strength, and relationship quality (ESEM).**

Overall, the model, in which relationship type contrast variables predicted exploratory RNSQ factors, which subsequently predicted the confirmatory second-order relationship quality factor, demonstrated an acceptable level of fit to the data, based on the more lenient cutoffs I



selected in light of the deliberately un-parsimonious exploratory aspects of the model,  $\chi^2(854) = 2239.10, p < .001$ , RMSEA 95% CI (.07, .08), CFI = .88, SRMR = .08.

Relevant unstandardized parameter estimates, which are used when calculating MCMAM-based indirect effects (Preacher & Selig, 2012), are presented here in the main text. As predicted, there were significant relationship type differences in relationship norm strength factors, though these were primarily relegated to the contrast between one-night stands and ongoing types of relationships. Specifically, one-night stands had significantly less agreed upon relationship norms ( $a_1 = -.99, p < .001$ ), less explicit relationship norms ( $a_2 = -.86, p < .001$ ), and anticipated less punishment for deviance from relationship norms ( $a_3 = -.98, p < .001$ ). Ongoing casual sex relationships also anticipated less punishment for deviance from relationship norms compared to exclusive relationship types ( $a_4 = -.94, p < .001$ ). All other relationship type differences in exploratory relationship norm strength factors were non-significant.

Also largely supporting my predictions, three of the four relationship norm strength factors were uniquely and positively associated with greater relationship quality. Specifically, higher quality relationships possessed greater levels of norm agreement ( $b_2 = .26, p < .001$ ), norm explicitness ( $b_3 = .16, p = .004$ ), and anticipated punishment for deviance ( $b_4 = .10, p = .04$ ). Levels of norm manageability were not significantly associated with relationship quality, ( $b_1 = -.06, p = .26$ ).<sup>7</sup>

Finally, as expected, one-night stands were of significantly lower quality compared to ongoing relationship types ( $c'_1 = -.54, p < .001$ ), ongoing casual sex relationships were of significantly lower quality compared to exclusive relationship types ( $c'_2 = -.63, p < .001$ ), and

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<sup>7</sup> The association between RNSQ factors and relationship quality was not significantly moderated by the extent to which they shared assets and responsibilities. This was also the case in Studies 4 and 5.

newly formed exclusive romantic relationships were of significantly lower quality compared to long-term exclusive romantic relationships ( $c'_3 = -.30, p = .01$ ).

I then examined whether relationship type differences in relationship quality were a product of relationship type differences in RNSQ factors, via the MCMAM ( $N_{\text{resamples}} = 20000$ ) procedure outlined by Preacher and Selig (2012). As there were three separate predictors (i.e., each of the relationship type contrast variables), and four mediators (the exploratory *manageability*, *agreement*, *explicitness*, and *punishment* RNSQ) factors, I calculated a total of 12 indirect effects from the first ESEM.

Like relationship type differences in RNSQ factors, most of the significant indirect effects (three out of four) were relegated to the contrast between one-night stands and ongoing relationship types. Specifically, one-night stands were of lower quality, in part, because norms in those relationships were less agreed upon (Monte Carlo 95% CI:  $-.40, -.14$ ), less explicit (Monte Carlo 95% CI:  $-.28, -.03$ ), and partners anticipated less punishment for deviance ( $-.20, -.01$ ). My analyses also revealed that ongoing casual sex relationships were of lower quality compared to exclusive relationship types, in part, because partners anticipated less punishment for deviance ( $-.19, -.02$ ). All other indirect effects were non-significant. Cumulatively, this model accounted for 50.00% of the variance in latent relationship quality ( $p < .001$ ).

I must acknowledge, however, that because of the correlational data in Study 2, it is possible that the causal sequence of relationship norm strength and relationship quality is reversed. I therefore investigated a second, alternative, ESEM in which relationship type contrasts predicted the second-order confirmatory relationship quality factor, which in turn predicted the four exploratory RNSQ factors.

As the alternative indirect effects ESEM involves the same structural relations between the same latent variables—just simply in a different implied causal order—the fit of the model was the same,  $\chi^2(854) = 2239.10, p < .001$ , RMSEA 95% CI (.07, .08), CFI = .88, SRMR = .08. Many of the indirect effects ( $N_{\text{resamples}} = 20000$ ) of the relationship type contrasts on RNSQ factors, through differences in relationship quality, were significant. Specifically, compared to ongoing relationship types, one night stands had lesser norm agreement (95% CI: -0.81, -0.37), lesser norm explicitness (95% CI: -0.51, -0.03), and anticipated lesser punishment for deviance (95% CI: -0.56, -0.18), in part because they had lower levels of relationship quality. Similarly, compared to exclusive relationship types, ongoing casual sex relationships had lesser norm agreement (95% CI: -0.64, -0.26), lesser norm explicitness (95% CI: -0.41, -0.02), and anticipated lesser punishment for deviance (95% CI: -0.44, -0.13), in part because they had lower levels of relationship quality. Finally, compared to long-term exclusive relationship, new exclusive relationships had lesser norm agreement (95% CI: -0.31, -0.02), lesser norm explicitness (95% CI: -0.18, -0.0004), and anticipated lesser punishment for deviance (95% CI: -0.21, -0.01), in part because they had lower levels of relationship quality. Cumulatively, this model accounted for 2.00% of the variance in latent norm manageability ( $p = .30$ ), 29.00% of the variance in latent norm agreement ( $p < .001$ ), 16.00% of the variance in latent norm explicitness ( $p = .01$ ), and 30.00% of the variance in latent anticipation for punishment of deviance ( $p < .001$ ).

### **Testing theorized correlates of relationship norm strength (ESEM).**

In a third and final ESEM, I tested hypotheses of secondary importance pertaining to other theorized correlates of relationship norms strength. Specifically, I tested whether relationship norms would be stronger in relationships characterized by higher perceived

similarity, and when greater amounts of assets and responsibilities were collectively shared.

Given the conceptual simplicity of this model—it only entailed the four exploratory latent RNSQ factors, and the observed variables for the correlates—I have omitted a figure, though the model fit the data well,  $\chi^2(249) = 711.76, p < .001$ , RMSEA 95% CI (.07, .08), CFI = .90, SRMR = .05.

Results from this analysis generally supported my predictions. Greater perceived romantic/sexual similarity was associated with higher levels of norm manageability ( $r = .26, p < .001$ ), norm agreement ( $r = .35, p < .001$ ), and anticipated punishment for deviance ( $r = .21, p = .001$ ). Sharing a greater amount of assets and responsibilities, similarly, was associated with greater anticipated punishment for deviance ( $r = .21, p < .001$ ), and marginally greater norm explicitness ( $r = .12, p = .08$ ), though surprisingly it was also associated with less norm manageability ( $r = -.23, p < .001$ ). None of the correlations between RNSQ factors and perceived general similarity were significant.

## **Discussion**

Many of my predictions for Study 2 were supported. Similar to perceptions of RNS in Study 1, relationship types were actually experienced as entailing differing levels of the RNS factors. Further, RNS factors were generally strongly and positively correlated with relationship quality.

Examining the two competing indirect models, in which relationship quality and RNS factors alternated implied causal positioning of mediator and outcome, revealed tentative support for both. Analysis of the model in which RNS factors mediated relationship type differences in relationship quality revealed a modest number of significant indirect effects, and the model accounted for a large amount of variance in relationship quality. Analysis of the model in which relationship quality mediated relationship type differences in RNS factors, alternatively, revealed

many more significant indirect effects, though this model accounted for a lesser amount of variance in RNS factors. Failing to accumulate decisive evidence for the causal primacy of RNS or relationship quality, is, of course, a limitation of the correlational design that I employed in Study 2; experimentally teasing apart this association will be addressed in later studies (Studies 4 and 5).

My analyses of other correlates of RNS also generally supported my predictions, as participants who shared more assets and responsibilities with their partner, generally reported having stronger norms in their relationship. Further, the correlations between RNS and similarity revealed a domain-specificity pattern, such that ratings of general similarity—which may have little to do with relationships—were unassociated with RNS, whereas sexual and relational similarity was, as predicted, positively associated with RNS. Not all correlations supported my predictions, however, as higher norm manageability was negatively associated with perceptions of relational and sexual similarity.

Though the development of a new multidimensional measure of RNS and the exploration of individuals actually in different types of sexual relationships were strengths of Study 2, Studies 1 and 2 both shared the key limitation of being investigations of *individuals* and not *relationships*. As such, it is unclear to what extent perceptions of RNS are shared between relationship partners, or whether relationship partners actually conform to their relationship norms more closely in the presence of strong norms. Both of these questions are crucial sites of construct validation for my RNS concept. In the case of the former, there would hardly be anything relational about RNS at all if these perceptions were not shared; in the case of the later, RNS would seem of trivial importance if it did not afford some prediction of partner compliance

with relationship norms. I therefore addressed these possibilities in a dyadic examination, in Study 3.

### Study 3

A limitation shared by Studies 1 and 2 is that their samples were exclusively made up of individual participants, to study what was ostensibly a quality of relationships. In other words, there would hardly be anything relational about relationship norm strength if partners did not share some common appraisal of the strength of norms in their relationship, and/or if the strength of relationship norms sensed by one partner did not somehow impact the other (Kenny, Kashy, & Cook, 2006). The purpose of Study 3 was to therefore study relationship norm strength using a sample of romantic couples, in order to assess whether couples share, and are mutually impacted by, their sense of relationship norm strength. As the results of Study 2 suggest that RNS factors are generally positively associated with relationship quality, I evaluated to what extent each partner's appraisal of RNS was associated with their own and their partner's sense of relationship quality.

Another core purpose of Study 3 was to evaluate a crucial source of criterion validity for the relationship norm strength questionnaire. I therefore tested a relatively straightforward, but important hypothesis in Study 3. Namely, following the *norm amplification hypothesis*, individuals should report greater adherence to the norms of their relationship when they report that the norms of their relationship are stronger. This predicted association should also hold for one partner's appraisal of the other partner's level of norm-compliant behavior. That is, both partners should report that they are abiding, and perceive their partners to be abiding, by the norms of their relationship more readily when the norms of their relationship are rated as greater in strength.

Study 3 also allowed me to test a series of exploratory dyadic models regarding the association between norm compliance and relationship quality, and the accuracy and bias of relational perception of norm compliance. I tentatively predicted that greater self- and partner-reported compliance would be associated with greater relationship quality, and that partners would exhibit both a moderate degree of accuracy and bias in assessing each other's compliance to their relationship's norms.

### **Method**

Study 3 was similar to Study 2 in many methodological respects, particularly, the measures of relationship quality and RNS that I used. However, a distinguishing aspect of Study 3 was that instead of recruiting individuals in relationships, I recruited both members of numerous romantic couples. Analytically, Study 3 was unique in that I was required to conduct a form of dyadic data analysis, in order to adequately address the dependency of observations in my data.

#### **Participants and procedure.**

Over the course of a month and a half, I recruited 25 heterosexual couples and 11 individuals who were part of a heterosexual couple, but their partners were absent ( $M_{age} = 27.68$ ,  $SD = 10.47$ ).<sup>8</sup> Participants were recruited while waiting in line to be let into an arena for games of a local collegiate sports team. Most of the couples were comprised of individuals who identified as White/Caucasian ( $n = 51$ ), with smaller numbers of Hispanic/Latina/Latino ( $n = 6$ ), Asian ( $n = 1$ ), and *other* ( $n = 1$ ) identified participants.

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<sup>8</sup> Individuals were eventually permitted to participate because of the slow recruitment rate and concerns about adequate statistical power. I describe how I used these individuals in dyadic data analyses later.

Research assistants collected data from couples only if both partners of the romantic couple agreed to participate in the research. After obtaining informed consent, romantic partners were provided with separate clipboards of the study materials, and completed their surveys independently.

### **Measures.**

The survey for Study 3 was extremely brief (see Appendix A3 for Study 3 Materials), and included measures virtually the same measures of relationship quality and relationship norm strength used in Study 2. Specifically, the survey consisted of the PRQC (Fletcher et al., 2000), the Relationship Norm Strength Questionnaire, and a small number of demographic and other relationship questions. As the sample for Study 3 was too small to facilitate analyses of latent variables (e.g., through ESEM), I simply averaged items to create scale scores.

#### ***Perceived relationship quality components inventory.***

The PRQC (Fletcher et al., 2000) was once again used to assess each romantic partner's evaluation of the quality of his or her relationship. The 18 items were averaged into a reliable index of overall relationship quality for both male ( $\alpha = .90$ ) and female ( $\alpha = .89$ ) partners, with higher scores indicating a higher level of relationship quality.

#### ***Relationship norm strength questionnaire.***

I made some small revisions to the RNSQ between data collection for Studies 2 and 4, and Studies 5 and 3. Specifically, the lay-description of norms used in both the introductory text for the scale, and the individual items, was revised to include relationship "expectations" in addition to "rules" (e.g., "I feel like our relationship has a lot of 'rules' and expectations"). Additionally, the text of the seventeenth item was revised, following input from a committee



member (from “The ‘rules’ and expectations of our relationship are *legitimate*” to “The ‘rules’ and expectations of our relationship are *good*”).

Finally, I added six additional questions, three of which assessed participants’ perceptions of their own level of adherence to their relationship norms (e.g., “I consistently follow the ‘rules’ and expectations of our relationship”), and another (identical) three that assessed a participant’s perception of their partner’s adherence to their relationship norms (e.g., “My partner has regularly broken the ‘rules’ and expectations of our relationship”).

In order to create observed scores of RNS factors (i.e., not latent factors, as in Studies 2, 4, and 5), I examined the rotated factor loading plots from Studies 2 and 4, and averaged items that loaded significantly and substantively ( $>.30$ ) onto a given factor (e.g., *manageability*) in both studies (see Table 4). All items in the RNSQ were averaged into one of the composites; one item (item 9) was averaged into two of the composites. Internal consistency was acceptable for male and female evaluations of *norm manageability*, *agreement*, and *anticipated punishment* ( $\alpha = .68-.92$ ). Male and female ratings of *norm explicitness*, however, were quite unreliable ( $\alpha = .37-.48$ ). Participants—especially men—also seemed to struggle with providing reliable responses of their own *norm adherence* ( $\alpha = .04-.52$ ), and their *perceptions* of their *partner’s norm adherence* ( $\alpha = .001-.56$ ), though for the male participants, this may have been in part because of the low variability in their scores.

### **Data Analysis Strategy.**

Data were analyzed using a series of Actor-Partner Interdependence Models (APIM; Kenny et al., 2006), a popular form of dyadic data analysis, using a structural equation modeling approach in *R* (R Core Team, 2014), via the *lavaan* package (Rosseel, 2012). APIMs, in their simplest form, model the prediction of each dyad member’s standing on a given outcome

variable, from their own and their partner's scores on some predictor variable, while simultaneously estimating the within-dyad correlation between partner's predictor scores, and their residual outcome scores (see Figure 6 for an example APIM diagram). The regressive pathway between an individual's predictor variable and their own outcome variable is called an *actor* effect; the regressive pathway between an individual's predictor variable and their partner's outcome variable is called a *partner* effect (Kenny et al., 2006).

In total, I examined 10 separate APIMs; though it would have been preferable to run fewer models by including more than one predictor variable in each, I felt that the low sample size (sample size with APIM is the number of couples, not the number of individual participants) made such an approach untenable. The first four APIMs tested the dyadic associations between each of the RNSQ factors (separately) and relationship quality, related to the primary hypothesis (i.e., replicating the associations found in Study 2). The next four APIMs tested the dyadic associations between each of the RNSQ factors (separately) and self-reported ratings of norm compliance, related to the secondary *norm amplification* hypothesis. Finally, I examined two exploratory APIMs, the first of which tested the dyadic association between self-reported ratings of norm compliance and relationship quality, and the second of which tested the dyadic association between self-reported ratings of norm compliance and partner perceptions of norm compliance.

It is important to note that, though analyzed in an SEM framework, there was nothing latent about the APIMs in Study 3. That is, independent and dependent variables were observed scores and therefore contained measurement error; SEM was simply used for its ability to simultaneously model multiple outcomes (i.e., both partners' scores on an outcome variable). Full-information maximum likelihood was used to estimate all models, while also providing

estimates of missing values (Enders, 2010); this is how partner scores were computed for the 11 individuals who participated without their partner. After estimating the initial APIMs, I tested whether the strength of actor and partner effects differed between male and female partners, by constraining these paths to equivalency; a significant  $\chi^2$  value indicates that such constraints are not empirically tenable.

## **Results**

### **APIMs of dyadic associations between RNSQ factors and relationship quality.**

Estimated unstandardized actor and partner path coefficients are reported in Table 5; constraining actor and partner effects to equivalency between men and women did not degrade the fit of these APIMs, and so only one actor and one partner effect are reported for each APIM.

These APIMs provided mixed support for the hypothesized positive association between RNSQ factors and ratings of relationship quality. As in Study 2 and supporting my predictions, for example, dyad members who rated the norms of their relationship as more coherent and agreed upon reported a higher level of relationship quality. However, contrary to the findings of Study 2 and my hypotheses for Study 3, partner effects for the association between norm explicitness and anticipated punishment were negative. That is, individuals reported lower levels of relationship quality when their partners indicated that the norms of their relationship were more explicit and strongly enforced. Throughout these analyses, partners generally agreed on levels of norm manageability and anticipated punishment ( $r = .32$  and  $.64$ , respectively), whereas there was little agreement in terms of (ironically) norm agreement and explicitness ( $r = -.02$  and  $.01$ , respectively).

### **APIMs of dyadic associations between RNSQ factors and norm compliance.**

Regarding self-reports of norm compliance, as with the previous APIMs, constraining actor and partner effects to equivalency between men and women did not degrade the fit of these

APIMs, and so only one actor and one partner effect are reported for each APIM. Actor effects in these APIMs generally supported the *norm amplification* hypothesis, as individuals who rated their relationship's norms as more coherent, agreed upon, and anticipated more punishment for deviance also reported complying with their relationship's norms to a greater extent. Curiously, however, when an individual indicated their relationship entailed greater punishment for deviance, their partner reported complying with their relationship's norms to a lesser extent.

Regarding perceptions of partner norm compliance, actor and partner effects were significantly different between men and women for models in which norm manageability,  $\chi^2(2) = 10.42, p = .01$ , agreement,  $\chi^2(2) = 10.10, p = .01$ , and explicitness,  $\chi^2(2) = 5.47, p = .07$ , were used as predictors; actor and partner effects are therefore reported separately for male and female partners for these APIMs.

As with the analyses of self-reports of compliance, actor effects predicting perceptions of partner norm compliance generally supported the *norm amplification* hypothesis. Men and women both perceived their partner as conforming to their relationship's norms more reliably when they rated the norms of their relationship as more coherent, and more agreed upon. Though not significant, the actor effect of anticipated punishment on norm compliance was also in the expected positive direction. Individual ratings of norm explicitness, however, did not predict perceptions of a partner's norm compliance.

Some partner effects also supported the *norm amplification* hypothesis: When men reported greater norm manageability, they were perceived by their female partners as complying to norms more reliably; similarly, women who indicated greater norm agreement were perceived as more reliably conforming to relationship norms. Other partner effects, however, contradicted the *norm amplification* hypothesis. Specifically, men who indicated greater norm agreement,

women who indicated greater norm explicitness, and both partners who anticipated greater punishment for deviance, were rated by their partners as less compliant with their relationship's norms.

### **Exploratory APIMs.**

The first exploratory APIM examined the dyadic associations between self-reported and perceptions of partner norm compliance, and self-reported relationship quality. Unlike the other APIMs, I used both self-reports of compliance and perceptions of partner compliance as simultaneous predictors of relationship quality, in order to evaluate their relative importance. Constraining actor and partner effects to equivalency between male and female partners was empirically supported. As can be seen in Table 5, partner perceptions appeared to be the more importance correlate of relationship quality, as actor and partner effects for partner perceptions were both positive and significant, compared to nonsignificant effects for own compliance. In other words, relationship partners benefit in relationship quality from seeing, and being seen, by one another as compliant with their relationship's norms.

The final APIM assessed actor and partner effects between dyadic self-reports of norm compliance, and perceptions of partner norm compliance. This analysis follows Kenny and Acitelli's (2001) APIM approach to modeling bias and accuracy in partner-perception. Partner effects, in this APIM, are the regressive path representing the association between an individual's self-reports of compliance and their partner's perception of their compliance; positive scores indicate greater accuracy in partner perception. After controlling for these partner effects (i.e., accuracy), the actor effects therefore represent to what extent an individual's own compliance level biases their estimation of their partner's compliance (see Figure 7 for this particular APIM). Constraining accuracy and bias paths to equivalency between male and female partners was empirically tenable. As indicated in Table 5, the results suggest that partners'

assessments of each other's compliance are almost entirely a product of biased projection, with next to no accuracy in partner perception.

## **Discussion**

Given the extremely limited number of couples—full or partial—recruited for Study 3, and the unreliability of some of the variables studied herein, the results of this dyadic examination must be considered very preliminary. That said, a number of interesting associations were revealed. Actor effects generally supported the previous findings of Study 2 regarding relationship norm strength and relationship quality, as individuals reporting stronger norms had higher quality relationships. Partner effects, conversely, were inconsistent with the findings of Study 2, as individuals who reported stronger norms (in terms of explicitness and anticipated punishment) had partners who rated their relationship as being of lower quality.

Actor effects of RNSQ factors and reports of self and partner compliance also supported the *norm amplification* hypothesis. Individuals reporting stronger norms were more compliant with their relationship norms, and perceived their partners to be more compliant with their relationship norms. Partner effects, in contrast, suggested that individuals reporting stronger norms had partners who complied with their relationship's norms less, and perceived each other as complying less.

One possible explanation for the discrepancy between actor and partner effects lies in the different pattern of which RNSQ factors significantly contributed to the actor and partner effects. Norm manageability and agreement were generally associated with greater self-reported relationship quality and compliance, and perceived partner compliance, whereas norm explicitness and anticipated punishment were negatively associated with a partner's report of these variables. Norm manageability and agreement would appear to reflect aspects of

relationship norm strength that are more internal, whereas norm explicitness and anticipated punishment for deviance involves greater consideration of external social entities.

The diverging pattern of actor and partner effects may therefore suggest that strong norms only lend themselves to greater relationship quality and compliance when these norms are felt to be self-determined by members of a given couple (see La Guardia & Patrick, 2008). In other cases, relationship norms may not be formed and enforced democratically, so to speak; one partner may be more responsible for developing and enforcing relationship norms than another. When such a discrepancy occurs, it may be the case that a higher-power partner feels less obliged to follow norms that they have explicitly articulated and threatened to enforce (Felmlee, 1994), or conversely, the lower-power partner might feel some sense of reactance in the face of these extrinsic demands (see Brehm & Brehm, 1981). Either possibility suggests a causal path from relationship norm strength factors to relationship quality and/or norm compliance.

Another possibility is that these causal paths might be reversed. For example, partners might instead perceive their partner's non-compliance as a threat to themselves, and understandably, their relationship. Individuals might therefore be prompted to respond to perceived deviance with greater punishment if they are especially motivated to maintain their relationship, even though my exploratory analyses suggest that these perceptions of partner compliance are not very accurate.

#### **Study 4**

Studies 2 and 3 suggested a positive association between self-reports of relationship quality and most of the RNS factors. However, both studies employed correlational designs, and my analyses of indirect effects for differences in relationship types from Study 2 indicated that both causal sequences, from relationship quality to RNS, and vice versa, were plausible. Spencer

and colleagues (Spencer, Zanna, & Fong, 2005) suggest that this is precisely the kind of ambiguous outcome that limits the scope of correlational assessments of mediation. Instead, they advocate for a ‘causal chain’ approach to assessing psychological processes, in which experiments are sequentially conducted that manipulate presumed mediator variables, and measure the effect on presumed outcomes.

I therefore conducted two experiments in order to evaluate both the possibility that relationship quality determined levels of RNS, and vice versa. My *mutual constitution of relationships hypothesis* posits that both causal paths are likely. That is, greater relationship quality likely promotes stronger norms, in order to maximize relational harmony and thereby relationship longevity (Rusbult, 1980), whereas strong norms, in turn, likely increase the quality of relationships by bringing relationship partners into greater uniformity with one another (Festinger et al., 1950).

In Study 4, I focused on evaluating the causal path from relationship quality to RNS, hypothesizing that experimentally activating a sense of relationship quality for individuals in relationships would result in participants reporting stronger norms in their relationship. I also used Study 4 as an opportunity to conceptually replicate the secondary hypothesized positive association between asset/responsibility sharing and RNS.

Finally, I tested a new secondary hypothesis in Study 4, pertaining to conflict in relationships. In cross-cultural scholarship on tightness-looseness, norms were stronger in nations and states with greater exposure to warfare (Gelfand et al., 2011; Harrington & Gelfand, 2014). Analogizing this association to the experience of conflict in relationships, I therefore tentatively hypothesized that participants who reported more frequent arguments in their relationship would also report greater levels of RNS.



## Method

### Participants and procedure.

I recruited participants from Amazon's Mturk service (Buhrmester et al., 2011). Individuals interested in participating first indicated their current relationship status; only participants who reported that they were currently in a romantic relationship were allowed to continue. My final sample consisted of 286 participants (160 female,  $M_{\text{age}} = 34.59$ ,  $SD = 10.63$ ) who indicated they were currently in a romantic relationship ( $M_{\text{length}} = 7.34$  years,  $SD = 7.24$ ). In terms of sexual orientation, participants mostly identified as heterosexual (91.30%), with smaller numbers identifying as Bisexual (4.20%), Gay/Lesbian (3.80%), or Asexual/other (0.30%). Most participants also ethnically identified as White/Caucasian (74.00%), with small numbers identifying as Black/African-American (10.50%), Asian (8.40%), Hispanic/Latino/Latina (6.00%), or Other (1.10%).

Participants who passed the initial relationship-status screening question were randomly assigned to one of three experimental relationship quality priming conditions (see Sakaluk, 2014, for similar relationship priming paradigms). In the *high quality* condition ( $n = 91$ ), participants were asked recall and describe a moment from their current relationship when they felt their relationship was of high quality. Specifically:

We are interested to know more about the current relationship that you are in. Many relationships experience ups and downs. **Please think of a time when you strongly felt like you and your partner had a great, high-quality relationship.** What were you and/or your partner doing, or what was happening that made you feel this way? How would you describe your feelings towards your partner at that moment?

In the *low quality* condition ( $n = 101$ ), participants were asked recall and describe a moment from their current relationship when they felt their relationship of low quality.

Specifically:

We are interested to know more about the current relationship that you are in. Many relationships experience ups and downs. **Please think of a time when things were not going well in your relationship and you questioned whether you and your partner had a good relationship.** What were you and/or your partner doing, or what was happening that made you feel this way? How would you describe your feelings towards your partner at that moment?

Finally, in the *control* condition ( $n = 94$ ), participants were asked to think about the last time they saw a movie with their partner, and to describe as much about the movie as they could remember; the intent of this control condition was to get participants to recall a memory about a relational event, as in the other two conditions, but one that would be unlikely to be strongly valanced in either a positive or negative way.

Upon completion of their assigned prime, participants completed a measure of relationship quality, then a measure of relationship norm strength, and finally, a number of items other descriptive demographic and relationship variables.

### **Measures.**

All study materials are presented in the Appendix A4. I once again used the PRQC (Fletcher et al., 2000) as my measure of relationship quality, and the updated RNSQ (i.e., as used in Study 3) as my measure of relationship norm strength. Finally, in order to test the secondary hypotheses of Study 4, I also asked participants to report on how frequently they had arguments with their partner (1 = *hardly at all*, 8 = *multiple times daily*), and also to indicate (*yes or no*)

whether they shared particular assets and responsibilities with their partner (i.e., were married, living together, sharing a bank account, co-owning a car, co-owning a house, or parents; summed to form an index ranging from 0 [*no shared assets/responsibilities*] to 6 [*shared many assets/responsibilities*]).

### **Data Analysis Strategy.**

Data analysis proceeded in three steps. First, participants' responses to their assigned primes were evaluated to ensure compliance with the relationship quality manipulation, and participants were excluded, as necessary. Then, I conducted a manipulation check by examining frequencies of positive emotion, negative emotion, and social process words using the Linguistic Inquiry and Word Count software by Pennebaker, Booth, & Francis (LIWC; 2007). Finally, to test the primary and secondary hypotheses of Study 4, I compared group differences in relationship quality and RNSQ factors, and then examined the correlations between argument frequency, asset/responsibility sharing, and RNSQ factors using ESEM (Asparouhov & Muthén, 2009).

### ***Evaluating prime responses.***

Participants' prime responses were read and coded by a research assistant, in order to screen out participants who did not respond in keeping with their assigned condition (e.g., a participant in the *high quality* condition reporting on what appeared to be a *low quality* memory, or alternatively, gibberish or otherwise nonsensical responses). Overall, 20 participants were removed for having problematic prime responses, which were evenly distributed across the three priming conditions,  $\chi^2(2) = 0.17, p = .92$  ( $ns = 6, 8,$  and  $6,$  respectively, Sakaluk, 2014). The description of participant characteristics reflects the final sample of 286, with these problematic responses removed.

***Manipulation check.***

As an initial manipulation check, I first analyzed the text of participants' prime responses using Linguistic Inquiry Word Count software (LIWC; Pennebaker, Booth, & Francis, 2007). LIWC analyzes the frequency of words appearing in a block of text, and categorizes words as belonging to one of several lists, or "dictionaries", related to some psychologically meaningful concept (e.g., social processes, positive emotion, negative emotion). Though not perfect representations of psychological experiences, LIWC dictionaries have been extensively tested and validated, and as such, the software remains a popular way of conducting basic text-based sentiment analysis in psychology.

Using a one-way multivariate analysis of variance (MANOVA), I specifically tested whether predictable differences emerged between the three experimental conditions in terms of frequencies of positive emotion and negative emotion words, as recalling high quality relationship moments should reflect positive emotional experiences, and recalling low quality relationship moments should reflect negative emotional experiences. I also examined the frequency of social process words between conditions, as I had intended all three primes to be equally social/relational.

As a second, and more direct manipulation check, I also tested whether predictable differences emerged on PRQC relationship quality scores. Those recalling high quality relationship moments should report greater relationship quality than those recalling low quality relationship moments; testing this aspect of the manipulation occurred within the context of the primary ESEM analysis (described below).

***Primary analysis.***

The primary analysis of Study 4 involved testing the effect of the relationship quality priming conditions on RNSQ factors. To do this, I once again utilized ESEM (Asparouhov & Muthén, 2009), in order to represent exploratory RNSQ factors in latent variable space. As in Study 2, the model was estimated using Maximum Likelihood, and exploratory factor loadings were rotated using the oblique Geomin method (Fabrigar & Wegener, 2012).

I then created orthogonal contrast coded variables to partition the between-groups variance of the relationship quality priming conditions (Cohen et al., 2003). The first contrast variable, labeled *condition*, compared participants in both the *high quality* and *low quality* conditions (coded as -.33) to those in the *control* condition (coded as .66). The second contrast variable, labeled *highlow*, compared participants in the *high quality* condition (coded as .5) to those in the *low quality* condition (coded as -.5).<sup>9</sup>

I regressed the latent confirmatory relationship quality factor from the PRQC onto the two contrast variables; this facilitated a portion of the manipulation check, but also allowed me to specifically test whether changes in RNSQ scores occurred, as I proposed, through changes in relationship quality. I then regressed the exploratory RNSQ factors onto the PRQC relationship quality factor, as well as the two contrast variables, while fully partialling out the influence of relationship length (see Figure 8) Model fit was assessed using the same criteria as in Study 2 (Hu & Bentler, 1999).

After estimating the full ESEM, I tested my primary hypothesis through evaluating a mediation model, in which the contrast variables—particularly the *highlow* contrast—predicted changes in RNSQ scores through changes in the PRQC relationship quality factor. The mediated

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<sup>9</sup> This coding scheme was selected rather than comparing each of the high and low relationship quality conditions to the control condition primarily on the basis of the LIWC manipulation check, regarding differences in frequencies of social word usage between the control and other conditions.

pathway was once again assessed using the MCMAM method (Preacher & Selig, 2012), with significant mediation being supported if the Monte Carlo 95% CI of the indirect effect did not include a value of zero.

For the tests of the secondary hypotheses in Study 4, I examined the correlations between the latent RNSQ factors and participant rates of the frequency of conflict in their relationship, and the level of assets and responsibilities shared with their partner.

## Results

### Effects of relationship quality prime on word frequencies.

Analysis of LIWC-coded frequencies of social, positive, and negative words revealed a significant and large multivariate effect of priming condition,  $F(6, 562) = 38.58, p < .001, \eta_p^2 = .29$  (see Figure 9). Univariate effects of priming condition were significant for social,  $F(2, 283) = 27.93, p < .001, \eta_p^2 = .17$ , positive,  $F(2, 283) = 48.27, p < .001, \eta_p^2 = .25$ , and negative words,  $F(2, 283) = 60.36, p < .001, \eta_p^2 = .30$ . Post-hoc pairwise comparisons using Tukey's HSD revealed that the text from control condition responses contained fewer social words than text from the high relationship quality (95% CI: -6.89, -3.42,  $d = -1.01$ ) and low relationship quality conditions (95% CI: -5.83, -2.45,  $d = -0.88$ ). As predicted, text from high relationship quality condition participants contained more positive emotion words than text from low relationship quality responses (95% CI: 2.41, 4.66,  $d = 1.26$ ); text from low relationship quality responses, similarly, contained more negative emotion words than text from high relationship quality responses (95% CI: 2.89, 4.56,  $d = 1.54$ ).

### Exploratory structural equation model of mediation.

As in Study 2, I determined a four-factor solution to be the best model to represent the 24 observed RNSQ items (see Figure 10 for parallel analysis plot). Table 6 contains the

standardized Geomin loadings for the four extracted exploratory RNSQ factors. The pattern of loadings indicates a relatively comparable measurement model of relationship norm strength, consisting of weakly related ( $r_s = .07-.39$ ) factors representing norm *manageability*, *explicitness*, *agreement*, and *anticipated punishment*.

The full ESEM model, in which priming contrast variables predicted the confirmatory relationship quality factor and the exploratory RNSQ factors, and relationship quality predicted RNSQ factors, while fully partialling out the influence of relationship length, fit the data well, based on the more lenient cutoffs I selected in light of the deliberately un-parsimonious exploratory aspects of the model,  $\chi^2(854) = 1856.94.45, p < .001$ , RMSEA 95% CI (.06, .07), CFI = .91, SRMR = .05. As expected, latent relationship quality scores were affected by the priming manipulation. Specifically, analysis of the *highlow* contrast revealed that those in the *high quality* condition reported significantly higher relationship quality than those in the *low quality* condition ( $a_2 = 0.48, p = .002$ ), while the *condition* contrast (comparing high and low quality priming to the control condition) was non-significant, and near zero ( $a_1 = 0.03, p = .82$ ). The relationship quality priming manipulation therefore appeared to affect participants as intended.

As in Study 2, relationship quality was associated with most of the RNSQ factors, though a somewhat different pattern of finding emerged. Specifically, higher levels of relationship quality were associated with greater norm manageability ( $B_1 = 0.44, p < .001$ ) and agreement ( $B_2 = 0.80, p < .001$ ). However, unlike Study 2 (but as in Study 3), relationship quality was negatively associated with anticipated punishment ( $B_3 = -.25, p = .001$ ), and unrelated to norm explicitness ( $B_4 = -.08, p = .23$ ).

Participants primed with high relationship quality memories reported higher levels of norm agreement ( $C_2 = 0.34, p = .03$ ); no other total effects were significant. After controlling for the influence of the latent relationship quality factor and relationship length, none of the direct effects of the prime contrast variables on RNSQ factors were significant ( $C'$  paths = -0.17, 0.16). MCAMM analysis (Preacher & Selig, 2012;  $N = 20,000$ ) of the mediated effects of the *highlow* contrast, however, revealed that the relationship quality prime impacted the RNSQ factors through changes in relationship quality levels. Specifically, those primed with high relationship quality memories reported greater norm manageability (95% CI: 0.07, 0.38), greater norm agreement (95% CI: 0.14, 0.63), and anticipated less punishment for deviance (95% CI: -0.24, -0.03), compared to those primed with low relationship quality memories, because of changes in perceived relationship quality. The indirect effect of the *highlow* contrast on norm explicitness was not significant (95% CI: -0.15, 0.06). Collectively, this mediation model accounted for 20% of the variance in latent norm manageability ( $p < .001$ ), 3% of the variance in latent norm explicitness ( $p = .41$ ), 43% of the variance in latent norm agreement ( $p < .001$ ), and 6% of the variance in latent anticipated punishment ( $p = .06$ ).

### **Tests of secondary hypotheses.**

Correlations between RNSQ factors and levels of conflict and asset/responsibility sharing in relationships provided mix support for the secondary hypotheses of Study 4. As predicted, more frequent conflict between partners was associated with more explicit norms ( $r = .31, p < .001$ ), and greater anticipated punishment for deviance ( $r = .20, p = .002$ ).<sup>10</sup> Likewise, sharing more assets and responsibilities was associated with more norm agreement ( $r = .22, p < .001$ ). However, contrary to my predictions, more frequent conflict was associated with less coherent norms ( $r = -.36, p < .001$ ) and less agreed upon norms ( $r = -.38, p < .001$ ).

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<sup>10</sup> Ratings of conflict frequency were unaffected by the relationship quality priming procedure.



## **Discussion**

The experimental results of Study 4 provided some support for the hypothesized causal role of relationship quality in promoting RNS. Participants primed to recall high quality relationship memories did, in fact, rate their relationships as being of higher quality, compared to those primed to recall lower-quality memories. As a result of the boost in measured relationship quality, these participants reported more coherent and agreed upon norms than those primed to recall low relationship quality memories.

Contrary to my predictions, priming high relationship quality also translated to anticipating less punishment for deviance. The unexpected effect of relationship quality on anticipated punishment may have occurred because of participants rejecting thoughts of negative aspects of their relationship when feeling good about their partners (Murray, Holmes, & Griffin, 1996); this possibility could be better evaluated in the context of a longitudinal study of RNS and relationship quality.

Correlations between RNSQ factors and reports of conflict and asset/responsibility sharing inconsistently supported my secondary hypotheses, as some of the associations were in the predicted direction (conflict predicted greater norm explicitness and anticipated punishment; sharing assets and responsibilities predicted greater norm agreement), whereas others were in the opposite direction (conflict predicted less manageability and agreement). Experimental manipulation of RNS would be a more effective means of determining the causal order of these associations, as, for example, conflict could make norms seem less coherent, or conversely, conflict could occur because norms are insufficiently coherent.

## **Study 5**

In the final study, I tested the causal path from RNS to relationship quality. I predicted that participants primed to recall instances of strong norms in their relationship would report higher levels of relationship quality than those primed to recall instances of weak norms in their relationship. I also attempted to directly replicate the secondary hypotheses from Study 4, by examining the associations between RNSQ factors and participant reports of levels of asset/responsibility sharing, and frequency of conflict.

## **Method**

### **Participants and procedure.**

I recruited participants from Amazon's Mturk service (Buhrmester et al., 2011). Individuals interested in participating first indicated their current relationship status; only participants who reported that they were currently in a romantic relationship were allowed to continue. My final sample consisted of 239 participants (121 female,  $M_{\text{age}} = 34.07$ ,  $SD = 11.05$ ) who indicated they were currently in a romantic relationship ( $M_{\text{length}} = 7.99$  years,  $SD = 9.53$ ). In terms of sexual orientation, participants mostly identified as heterosexual (90.70%) with smaller numbers identifying as Bisexual (6.30%), Gay/Lesbian (2.10%), or Asexual/other (0.80%). Most participants also ethnically identified as White/Caucasian (75.10%), with small numbers identifying as Black/African-American (9.70%), Asian (8.40%), Hispanic/Latino/Latina (4.20%), or Other (2.50%).

Participants who passed the initial relationship-status screening question were randomly assigned to one of three experimental RNS priming conditions. In the *strong norms* condition ( $n = 79$ ; see Appendix for example responses), participants were asked recall and describe a moment from their current relationship when they felt like the norms of their relationship were clear, agreeable, explicit and enforced. Specifically:

We are interested to know more about the current relationship that you are in. We are especially interested in learning about the ‘rules’ and expectations you and your partner may have for one another in your relationship. For example, some couples might have ‘rules’ and expectations about parts of their sexual relationship, finances, family roles, or other topics. **Please think about a time in your current relationship when you and your partner explicitly discussed or negotiated some of the ‘rules’ and expectations of your relationship, agreed upon them, understood them, and recognized that there would be serious consequences for breaking them.** What were you thinking about and feeling during this moment in your relationship?

In the *weak norms* condition ( $n = 73$ ; see Appendix for example responses), participants were asked recall and describe a moment from their current relationship when they felt like the norms of their relationship were ambiguous, disagreed upon, assumed to exist, and weakly enforced. Specifically:

We are interested to know more about the current relationship that you are in. We are especially interested in learning about the ‘rules’ and expectations you and your partner may have for one another in your relationship. For example, some couples might have ‘rules’ and expectations about parts of their sexual relationship, finances, family roles, or other topics. **Please think about a time in your current relationship when you felt as though you weren’t sure what the ‘rules’ and expectations of your relationship were. You may have also felt unsure of whether you and your partner agreed on what ‘rules’ and expectations should be in place, or what the consequences of breaking these ‘rules’ and expectations might be.** What were you thinking about and feeling during this moment of uncertainty in your relationship?

Finally, identical to the procedure in Study 4, in the *control* condition ( $n = 87$ ), participants were asked to think about the last time they saw a movie with their partner, and to describe as much about the movie as they could remember.

Upon completion of their assigned prime, participants completed the same battery of measures used in Study 4, but in the order of the measure of RNSQ (relationship norm strength), then the PRQC (relationship quality), and finally, a number of items other descriptive demographic and relationship variables (see Appendix A5).

### **Data Analysis Strategy.**

Data analysis for Study 5 was identical to Study 4. I first evaluated the responses participants wrote to their assigned priming condition, and removed participants from the sample who did not abide by the priming procedure. I then analyzed the text of participants' prime responses as a manipulation check of my RNS priming procedure. Finally, I used ESEM (Asparouhov & Muthén, 2009), to evaluate the effects of my priming manipulation on participants' ratings of relationship quality, through the four RNSQ factors.

### ***Evaluating prime responses.***

I read and coded participants' prime responses, in order to screen out participants who did not respond in keeping with their assigned condition (e.g., some participants in the *Weak Norms* condition initially recalled weak norms from their relationship, but then later affirmed the strength of their relationship's norms). Overall, 67 participants were removed for having problematic prime responses, which were evenly distributed across the three priming conditions ( $n_s = 22, 24, \text{ and } 21$ , respectively, Sakaluk, 2014),  $\chi^2(2) = 0.84, p = .66$ . The description of participant characteristics reflects the final sample of 239, with these problematic responses removed.

### ***Manipulation checks.***

As an initial manipulation check, I again analyzed the text of participants' prime responses using LIWC (Pennebaker et al., 2007). Using a one-way multivariate analysis of variance (MANOVA), I tested whether differences emerged between the three experimental conditions in terms of frequencies of a broad array of cognitive process. Specifically, I examined group differences in frequencies of *insight* (e.g., think, know, consider), *causation* (because, effect, hence), *discrepancy* (should, would, could), *tentative* (maybe, perhaps, guess), *certainty* (always, never), and *inhibition* (block, constrain, stop) words included in participants' prime responses.

Though I had some predictions for the pattern of results, this manipulation check analysis was also somewhat exploratory. I generally expected participants in both the *strong* and *weak* norm conditions to use more *insight*, *causation*, and *discrepancy* words, than those in the *control* condition, as thinking about relationship norms would have required participants to reflect on their and their partner's thoughts about relationship conduct, and how the norms of their relationship guide their behavior (v. recalling a movie). However, I expected those recalling *weak norms* to use more *tentative* words, and those recalling *strong norms* to use more *certainty* and *inhibition* words, as weak norms should have entailed participants feeling unsure of what was expected of them, and recalling strong norms should have left participants feeling confident of these expectations, but also aware that they were expected to inhibit certain norm-deviant behavior.

As a second, and more direct manipulation check, I also tested whether predictable differences emerged on RNSQ relationship quality scores. Those recalling strong relationship norm moments should report greater normative manageability, agreement, explicitness, and anticipated punishment for deviance, than those recalling weak relationship norm moments;

testing this aspect of the manipulation occurred within the context of the primary ESEM analysis (described below).

***Primary analyses.***

The primary analysis of Study 4 involved testing the effect of the relationship norm strength conditions on the second-order PRQC relationship quality factor. To do this, I once again utilized ESEM (Asparouhov & Muthén, 2009), in order to represent exploratory RNSQ factors in latent variable space. As in Study 2 and 4, the model was estimated using Maximum Likelihood, and exploratory factor loadings were rotated using the oblique Geomin method (Fabrigar & Wegener, 2012).

I then created dummy coded variables to partition the between-groups variance of the relationship quality priming conditions (Cohen et al., 2003). The first dummy variable, labeled *strong*, compared participants in the *strong norms* condition (coded as 1) to those in the *control* condition (coded as 0). The second dummy variable, labeled *weak*, compared participants in the *weak norms* condition (coded as 1) to those in the *control* condition (coded as 0).<sup>11</sup>

I regressed the latent exploratory RNSQ factors onto the two dummy variables; this facilitated a portion of the manipulation check, but also allowed me to specifically test whether changes in relationship quality scores occurred, as I proposed, through changes in RNSQ factors. I then regressed the second-order relationship quality variable onto the RNSQ factors, as well as the two dummy variables (see Figure 11). Model fit was assessed using the same criteria as in Study 2 and 4 (Hu & Bentler, 1999).

After estimating the full ESEM, I tested my primary hypothesis through evaluating a mediation model, in which the dummy variables predicted changes in relationship quality

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<sup>11</sup> This coding scheme was selected rather than the contrast coding adopted in Study 4, because there was not a clear empirical imperative based on the results of the manipulation check with LIWC data.

through changes in the RNSQ factors. The mediated pathway was once again assessed using the MCMAM method (Preacher & Selig, 2012), with significant mediation being supported if the Monte Carlo 95% CI of the indirect effect did not include a value of zero.

For the tests of the secondary hypotheses in Study, I again examined the correlations between the latent RNSQ factors and participant rates of the frequency of conflict in their relationship, and the level of assets and responsibilities shared with their partner.

## Results

### Effect of relationship norm strength primes on word frequencies.

Analysis of LIWC-coded frequencies of insight, causation, discrepancy, tentative, certainty, and inhibition words revealed a significant and large multivariate effect of priming condition,  $F(12, 462) = 8.71, p < .001, \eta_p^2 = .19$  (see Figure 12). Univariate effects of priming condition were significant for insight,  $F(2, 236) = 5.89, p = .003, \eta_p^2 = .05$ , causation,  $F(2, 236) = 4.76, p = .009, \eta_p^2 = .04$ , discrepancy,  $F(2, 236) = 25.43, p < .001, \eta_p^2 = .18$ , tentative,  $F(2, 236) = 15.04, p = .001, \eta_p^2 = .11$ , certainty words,  $F(2, 236) = 14.88, p < .001, \eta_p^2 = .11$ , and marginally significant for inhibition words,  $F(2, 236) = 2.44, p = .09, \eta_p^2 = .02$ .

Post-hoc pairwise comparisons using Tukey's HSD generally supported the validity of the norm strength manipulation, as they revealed that the text from participants from both the *strong* and *weak norms* conditions contained more insight (95%  $CI_{strong}$ : 0.22, 1.98,  $d = 0.47$ ; 95%  $CI_{weak}$ : 0.22, 2.02,  $d = 0.50$ ), discrepancy (95%  $CI_{strong}$ : 1.62, 3.69,  $d = 1.04$ ; 95%  $CI_{weak}$ : 1.70, 3.81,  $d = 1.18$ ), and certainty words (95%  $CI_{strong}$ : 0.07, 1.33,  $d = 0.50$ ; 95%  $CI_{weak}$ : 0.84, 2.12,  $d = 0.89$ ) than did responses from participants the *control* condition. Participants in the *strong norms* condition also used more causation words than participants in the *control* condition (95%  $CI$ : 0.19, 1.64,  $d = 0.45$ ); the same was marginally true of participants in the *weak norms* condition (95%  $CI$ : -0.07, 1.42,  $d = 0.36$ ). Participants in the *weak norms* condition also used

more tentative words compared to participants in the *strong norms* and *control* conditions (95% CI<sub>strong</sub>: 0.74, 2.84,  $d = 0.59$ ; 95% CI<sub>control</sub>: 1.28, 3.34,  $d = 0.78$ ). And though pairwise differences in use of inhibition words were not significant, the trend was in the expected direction with those in the *strong norms* condition using the most inhibition words, followed by those in the *weak norms* condition, and the *control* condition. Finally, somewhat unexpectedly, participants in the *strong norms* condition used fewer certainty words than participants in the *weak norms* condition (95% CI: -1.43, -0.13,  $d = -0.39$ ).

### **Exploratory structural equation model of mediation.**

The full ESEM model, in which relationship norm strength priming dummy variables predicted the exploratory RNSQ factors, which subsequently predicted the confirmatory relationship quality factor, while fully partialling out the influence of relationship length, fit the data adequately, based on the more lenient cutoffs I selected in light of the deliberately unparsimonious exploratory aspects of the model,  $\chi^2(854) = 1880.97, p < .001$ , RMSEA 95% CI (.07, .08), CFI = .88, SRMR = .06.

As expected, latent RNSQ scores were affected by the norm strength priming manipulation. Specifically, analysis of the *strong* dummy variable revealed that those in the *strong norms* condition reported significantly greater normative agreement ( $a_2 = 0.35, p = .05$ ), and anticipated more punishment for deviance ( $a_4 = 0.81, p < .001$ ) than those in the *control* condition. Interestingly, participants in the *strong norms* condition also reported lesser normative explicitness ( $a_3 = -0.35, p = .05$ ), and participants in the *weak norms* condition anticipated more punishment fore deviance ( $a_8 = 0.39, p = .03$ ) than those in the *control* condition, perhaps because recalling the possibility of punishment made punishment more salient, relative to recalling a recent movie-going experience. As predicted, participants in the *weak norms* condition also perceived marginally less normative agreement ( $a_6 = -0.32, p = .07$ ) and less



normative explicitness ( $a_7 = -0.36, p = .04$ ) than participants in the *control* condition. Thus, for the most part, my experimental manipulation of relationship norm strength appeared to work as intended.

As in Study 2 and 3, relationship quality was associated with relationship norm strength. Specifically norm agreement ( $B_2 = 0.60, p < .001$ ) uniquely predicted relationship quality, whereas the association between norm explicitness was marginally predictive of relationship quality in the expected direction ( $B_3 = 0.19, p = .09$ ).

Participants primed with weak norms reported lower levels of relationship quality ( $C_2 = -0.35, p = .03$ ); the total effect of the dummy variable for the strong norm condition was not significant ( $C_1 = -.08, p = .61$ ). After controlling for the influence of the RNSQ factors and relationship length, none of the direct effects of the prime dummy variables on relationship quality were significant ( $C'$  paths =  $-0.08, -0.14$ ). MCAMM analysis (Preacher & Selig, 2012;  $N = 20,000$ ) of the mediated effects of the *strong* dummy variable, however, revealed that the strong relationship norms prime impacted participants' reports of relationship quality, through changes in levels of perceived norm agreement. Specifically, those primed with strong relationship norm memories reported greater relationship quality (95% CI: 0.002, 0.45), compared to those in the *control* condition, because of an improved sense of relationship norm agreement. All other indirect effects were non-significant. Collectively, the mediation model explained 37% of the variance in latent relationship quality ( $p < .001$ ).

### **Test of secondary hypotheses.**

Correlations between RNSQ factors and levels of conflict and asset/responsibility sharing in relationships provided mix support for the secondary hypotheses of Study 5. As in Study 4, more frequent conflict was associated with less coherent norms ( $r = -.14, p = .04$ ). Also as in Study 4, but contrary to my predictions, more frequent conflict between partners was associated

with less norms agreement ( $r = -.18, p = .01$ ).<sup>12</sup> Greater sharing of assets and responsibilities was also unexpectedly associated with less coherent ( $r = -.20, p = .003$ ) and agreed upon norms ( $r = -.36, p < .001$ ). All other correlations between RNSQ factors and ratings of conflict and asset and resource sharing were non-significant.

## Discussion

The results of Study 5 supported my predictions regarding the second causal step of the *mutual constitution hypothesis* involving RNS and relationship quality. Specifically, participants primed to recall strong relationship norms reported greater levels of relationship quality, because they felt higher levels of norm agreement in their relationship. Though the other three RNSQ factors did not play a significant role in this mediated effect, it is important to bear in mind that the parallel mediator model examined in Study 5 captures the *unique* mediated effects through the four RNSQ factors; simple correlations between the other RNSQ factors and relationship quality were generally positive as well.<sup>13</sup> Taken together with the findings of Study 4, it appears as though the quality of a relationship can shape the strength of that relationship's norms, which in turn can subsequently shape the quality of that relationship.

My attempts to replicate the correlational findings from Study 4, involving RNSQ factors and participant reports of conflict and asset and resource sharing in their relationships were met with mixed success. Despite their inconsistency, the correlational results from Study 4 and 5 suggest that RNSQ factors are somehow linked with relational conflict and asset and resource sharing. However, it is clear that these associations will require dedicated empirical attention—

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<sup>12</sup> As in Study 4, self-reports of conflict frequency were not affected by the relationship norm strength priming procedure.

<sup>13</sup> Latent zero-order correlations for norm manageability, agreement, explicitness, and anticipated punishment, with relationship quality, were .43 ( $p < .001$ ), .60 ( $p < .001$ ), .11 ( $p = .21$ ), and -.13 ( $p = .07$ ), respectively.

potentially experimental and/or longitudinal in nature— in order to establish a more consistent picture of how these variables relate.

### **Meta-Analysis of Relationship Norm Strength Measurement**

In Studies 2, 4, and 5, the measurement model of the RNSQ was specified using an exploratory model; the association between each item and each extracted factor was estimated, as were the correlations between factors (Fabrigar & Wegener, 2012). This modeling strategy, though not parsimonious, was deliberate given these studies constituted the initial piloting of the RNSQ. For subsequent research using the RNSQ, it would be advantageous to have a confirmatory measurement model for the RNSQ that, when tested, would be likely to yield an empirically supported model for the structure of relationship norm strength. A barrier to developing such a confirmatory model from the results of Studies 2, 4, and 5, however, is that each analysis produced a slightly different pattern of factor loadings. That is, though many of the items appeared to load onto the same factors from study to study, the pattern of significance for these loadings was not always consistent.

In order to develop a strong candidate confirmatory measurement model of the RNSQ, I therefore meta-analyzed factor loadings for each of the 24 items on each of the four exploratory RNSQ factors, as well as the correlations between each of the four RNSQ factors, from the three studies in which I used an exploratory measurement model for the RNSQ (Studies 2, 4, and 5). This analysis was made possible by the previous use of the maximum likelihood estimator for the exploratory measurement models in each of these three studies, which enabled the calculation of standard errors—a requirement for any effect-size to be meta-analyzed—for each of the estimated factor loadings and factor correlations. With these effect sizes (i.e., the factor loadings, and the factor correlations) and their standard errors, I was able to use the inverse-variance

method of weighting to estimate random-effects meta-analytic models for each factor loading and factor correlation (Borenstein, Hedges, Higgins, & Rothstein, 2009), using the *metafor* (Viechtbauer, 2010) package in *R* (R Core Team, 2014).

In total, my measurement meta-analysis involved synthesizing the estimates of 96 factor loadings (i.e., 24 items, onto four factors), and 6 correlations, from three studies. Meta-analytic estimates of RNSQ factor loadings is presented in Table 7, whereas the meta-analytic estimates of RNSQ factor correlations is presented in Table 8. Overall, the meta-analytic estimates replicate the factor structure first observed in Study 2. Specifically, across Studies 2, 4, and 5, four relatively weakly correlated factors reflecting normative manageability, agreement, explicitness, and anticipated punishment for deviance were supported.

### **General Discussion**

I will first briefly summarize the results of Studies 1-5, in terms of the support each provided (or did not provide) for my primary and secondary hypotheses. I then turn to discussing the importance of integrating relationship norm strength into the psychological study of close relationships. Before concluding, I offer some important limitations of Studies 1-5 and highlight promising avenues for future research.

#### **Summary of the Five Studies**

Across five studies, many of my primary hypotheses were supported. Following the *mutual constitution of relationships hypothesis*, participants in Study 1 perceived relationship types entailing greater mutual affiliative motivation (e.g., long-term relationships) as having stronger norms than relationships types entailing lesser mutual affiliative motivation (e.g., one-night stands). In Study 2, these effects conceptually replicated, as participants actually in relationship types entailing greater affiliative motivation reported greater norm agreement, explicitness, and anticipated punishment for deviance. Relatedly, relationship quality was

strongly associated with relationship norm strength factors. In Study 3, when an individual partner in a romantic dyad perceived the norms of their relationship as stronger, they generally reported higher levels of relationship quality. Perhaps the strongest evidence for the *mutual constitution of relationships hypothesis* came from Studies 4 and 5, as participants primed to recall high quality relationship moments (Study 4) reported having stronger relationship norms, and participants primed to recall strong relationship norms (Study 5) reported having higher quality relationships.

A number of my secondary hypotheses were also supported. As predicted by the *norm amplification hypothesis*, for example, individual partners from romantic dyads (Study 3) who reported that the norms of their relationship were strong also tended to report that they and their partner complied with their relationship's norms to a greater extent. Romantic partners in Study 3 also shared a sense of how coherent the norms of their relationship were, and to what extent deviance from these norms would be punished. Finally, relationship norm strength factors were correlated with other relationship variables in predictable ways, including: a positive association with ratings of sexual/relational similarity with one's partner (Study 2); positive associations with ratings of asset/responsibility sharing between partners (norm explicitness and anticipated punishment for deviance in Study 2, and norm agreement in Study 4); and positive associations with ratings of relationship conflict frequency (norm explicitness and anticipated punishment for deviance in Study 4).

A number of findings, however, contradicted my theorizing, or were inconsistent from study to study. Anticipated punishment for deviance, for example, while positively associated with relationship quality (as predicted) in Study 2, was negatively associated with relationship quality in Studies 3 and 4. And whereas stronger norms were positively associated with an

individual's compliance to relationship norms in Study 3, perceptions of norm strength were more often negatively associated with their partner's reports of norm compliance. Finally, though some of the correlations (i.e., with similarity, asset/responsibility sharing, and conflict) were, as expected, positively associated with relationship norm strength factors, others were negatively associated (i.e., asset/responsibility sharing and norm agreement in Study 2; conflict and norm manageability and agreement in Study 4 and 5; asset/responsibility sharing and norm manageability and agreement in Study 5). I discuss some of the limitations my five studies that may have led to these inconsistencies and contradictions later.

### **What is Relationship Norm Strength?**

Unlike the seemingly one-dimensional tightness-looseness construct (Gelfand et al., 2011), relationship norm strength manifests in *at least*<sup>14</sup> four weakly-related ways, in terms of the manageability, agreement, explicitness of norms, and the anticipated punishment for deviance from these norms. These aspects of relationship norm strength are conceptually supported by previous theory (Mischel 1973; Pelto, 1968; Triandis, 1989, 1994, 1996, 2004) and research (Maas et al., 2013; Meyer et al., 2010) in other domains of psychological research (e.g., cultural, occupational), as well by the consistency of the measurement of relationship norm strength in Studies 2, 4, and 5, as indicated by the measurement meta-analysis.

The weak correlations between relationship norm strength factors strongly suggest that these reflect largely independent aspect of relationship norm strength. Thus, I caution researchers from simply attempting to aggregate across RNSQ factors as a means of studying relationship norm strength “in general”—such as measurement strategy would be in stark contrast to what is supported by my data. Instead, researchers should study RNSQ factors either in tandem with one

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<sup>14</sup> I am open to the possibility that other aspects of relationship norm strength may be revealed in the future.

another, or elect to focus on one in particular, throughout the course of their research. The future study of norm manageability, agreement, explicitness, and punishment, will therefore likely unfold in different directions, with different correlates, causes and consequences for each.

### **Expanding the Normative Perspective on Close Relationship**

Social scientists studying close relationships have attempted to understand relationship norms exclusively in terms of their *content* (e.g., Clark & Mills, 1979; Muise & Impett, 2015; Sakaluk et al., 2014). Theory and research at broader levels of social organization (e.g., cultures), however, has illuminated the importance of considering the *strength* of norms as an important aspect of the normative group context (Pelto, 1968; Triandis, 1989; Gelfand et al., 2011).

At bare minimum, what the results of Studies 1-5 should make clear is that relationship norm strength is a promising new construct for the field of relationship science. Across five studies, relationship norm strength factors consistently exhibited large differences between various relationship types (Wentland & Reissing, 2011), and were strongly correlated with measures of relationship quality. Indeed, the experimental results from Study 5 suggest that relationship norm strength may be a tremendously important determinant of the quality of romantic relationships, rivaling or even surpassing, for example, the effects of attachment style (Nofhle & Shaver, 2006; Shaver & Brennan, 1992). In Nofhle and Shaver's (2006) study, for example, attachment dimensions of anxiety and avoidance explained 20% of the variance in relationship quality, whereas both in Studies 2 and 5, RNS factors explained 38% of the variance in relationship quality.

The effects from Studies 1-5 are, in my opinion, all the more interesting and impressive when one considers that the participants' ratings of relationship norm strength were without any direction to attend to particular normative domains (e.g., sexuality; Sakaluk et al., 2014) or content (e.g., communal v. exchange; Clark & Mills, 1979). In other words, the strength of

relationship norms emerged as an important cause and consequence of relationship quality, totally irrespective of the types of norms participants had in mind. This broad impact of the effects from Studies 1-5 bodes well for subsequent investigations of relationship norm strength.

### **Limitations**

Study-specific limitations have already been mentioned, but there are three general limitations of the present research that span multiple studies: the individual-level focus of Studies 1, 2, 4, and 5, the inconsistent nature of findings related to anticipated punishment, and the exploratory nature of the analyses for RNSQ data.

Study 3 was an extremely limited dyadic study of relationship norm strength, whereas the other four Studies were essentially an examination of the experience of relationship norm strength for individuals—albeit for individuals in relationships, for Studies 2, 4, and 5. However, as limited as it was, the preliminary findings of Study 3 underscore the importance of studying relationship norm strength with a dyadic approach, as many of the hypothesized and supported associations found for individuals (i.e., actor effects) were either not present, or reversed direction when the influence of the partner (i.e., partner effects) was examined. In other words, the relational dynamics in which relationship norm strength is involved may appear very different when tested individually, versus dyadically.

In Studies 2-5, the association between anticipated punishment for deviance from norms and relationship quality was quite inconsistent; the association was positive in Study 2 (individual/correlational), negative in Studies 3 (partner effect; dyadic/correlational) and 4 (individual/experimental), and non-significant in Study 3 (actor effect; dyadic/correlational) and 5 (individual/experimental).

This inconsistency in the association between anticipated punishment and relationship quality might be due to variation in methodology. For example, anticipated punishment may be



positively associated with relationship quality when individuals are able to rate these factors without giving much elaborated thought to either (as in Study 2), but this association may become negative when individuals are prompted to focus on a particular memory of poor relationship functioning, which likely concurred with some sort of relational conflict and punishment (as in Study 4).

However, to the extent that the inconsistency in associations between studies reflects meaningful theoretical variability, it may be the case that the meaning of anticipated punishment varies by context. In Study 3, for example, the negative partner effect of anticipated punishment on relationship quality may have occurred because partners sometimes do not agree on norms, and when they are punished for norms they do not endorse, it is a negative experience (e.g., an autonomy threat; see Chirkov, Ryan, Kim, & Kaplan, 2003). In Study 4, those primed to think of high quality memories may have rejected any content with a negative tone (punishment) thereby asserting that their relationships were, indeed, high in quality. In more naturally occurring measurement contexts, anticipated punishment may be construed, as intended, as one other aspect of norm strength (e.g., Study 2). As I describe below, exploring this possibility may require research focusing on further teasing apart the relationship norm strength factors, as some may develop earlier in relationships than others (e.g., agreement), and may serve to moderate associations between other norm strength factors (e.g., anticipated punishment) and relational variables.

Finally, all of the analyses of RNSQ data from Studies 2, 4, and 5 used an exploratory measurement model for the four RNSQ factors. Though all the RNSQ factors demonstrated simple structure (Thurstone, 1947), they are still very complicated factors. As such, I was reluctant to fit a confirmatory measurement model in these initial studies of relationship norm

strength, especially for the agreement and explicit factors, whereas the manageability and anticipated punishment factors were relatively well-defined throughout the Studies 2, 3, 4, and 5. The consequence of this modeling strategy is a less parsimonious representation of RNSQ data, however, this could be easily remedied in subsequent studies by employing a confirmatory measurement model based on aggregated factor loading patterns from Studies 2, 4, and 5.

### **Future Research**

As this paper serves as but the initial foray into the empirical study of relationship norm strength, there are many exciting avenues for future research. Exhausting my thoughts on the future possibilities is beyond the scope of this paper, however, I see there being five promising broad programs of research for future relationship norm strength.

#### **Norm domain specificity and content X strength interactions.**

The examination of relationship norm strength in Studies 1-5 could be considered a very domain-general approach, but there are a myriad normative domains within romantic relationships that may have been considered by my participants and that have caught the attention of researchers—sexuality (e.g., Sakaluk et al., 2014), helping (e.g., Clark & Mills, 1979), and parenting (e.g., Linkenbach, Perkins, & DeJong, 2003), to name a few. The importance of relationship norm strength to relationship dynamics may depend on the types of norms being characterized in terms of their strength, as well as the relational context. When starting a relationship, for example, the strength of sexual norms might be important to fostering a strong relationship, and the strength of norms pertaining to parenting may not be important at all. After a child is born, conversely, the strength of norms for parenting and helping norms may be more important to wellbeing, than the strength of sexual norms.

An even more nuanced approach could be taken by studying the strength of particular norms within a domain of related norms. In the case of sexuality, for example, heterosexual men

and women are frequently subjected to different norms (see Sakaluk et al., 2014). One could therefore study the strength of distinct norms within the sexual domain, such as norms about men's sexual initiation behavior or sexual availability, in order to examine whether the strength of a specific norm is particularly important to (in this case) the sexual wellbeing of a relationship.

Finally, a particularly powerful approach to the study of norms in relationships would be to look at the interactive effects of norm content and norm strength. The study of Clark and Mill's (1979) now-classic exchange and communal norms, for example, could be theoretically and empirically bolstered by through examinations of communal norms that are strong v. weak, and exchange norms that are strong v. weak.

#### **Broad relational mutual constitution.**

Studies 1-5 primarily focused on exploring the association between relationship norm strength and two separate, but related variables pertaining to affiliative motivation: relationship types, and relationship quality. However, there are many other individual, relational, and cultural variables that are likely involved in the process of the *mutual constitution of relationships*.

In terms of variables at the individual level, individual differences reflecting epistemic needs (e.g., need for closure; Webster & Kruglanski, 1994), and attachment style (i.e., anxiety and avoidance; Mikulincer & Shaver, 2007) both offer promising avenues of study. A relatively straightforward hypothesis can be derived for epistemic motivation and relationship norm strength. Norms function in part to reduce the range of conduct and opinion that is considered acceptable in a given context, leaving people with a better idea of what it expected of them (Festinger et al., 1950). Those craving greater order and predictability, and less ambiguity and certainty in their lives should therefore prefer relationships characterized by stronger norms. In

turn, stronger relationship norms should decrease epistemic motivation, as individuals have some of their epistemic needs met by the relationships they inhabit.

Hypothesizing about relationship norm strength and attachment anxiety and avoidance (Mikulincer & Shaver, 2007) is not so straightforward. On the one hand, avoidant and anxious individuals likely diverge with respect to desired levels of relationship norm strength; anxious individuals will likely prefer the relational certainty provided by strong norms, whereas avoidant individuals may resent this normative oversight. However, those higher on either dimension of insecurity will likely have a biased appraisal of the strength of norms in their relationship. Thus, investigations of the attachment and relationship norm strength link may require assessing relationship norm strength in multiple ways, including self-reports of perceptions, ideally desirable levels, and partner-reports of relationship norm strength.

At the relational level, variables such as those investigated in Studies 2, 3 and 5—namely similarity, conflict, and resource sharing, should all maintain an association with relationship norm strength (Gelfand et al., 2011; Triandis, 1989). Though the correlational analyses in the present paper leaves unclear the nature of these associations with relationship norm strength, they support the fact that these relational variables matter for norm strength. Longitudinal investigations (described in the next section) and further experimental manipulation of the strength of relationship norms would further clarify the nature of the connection between these types of variables and relationship norm strength.

Lastly, cultural variables such as tightness-looseness (Triandis, 1989; Gelfand, 2011) should also exhibit a mutually constitutive association with relationship norm-strength. In other words, societies that are tight should produce relationships that also create stronger relationship norms, and relationships with strong norms should also help to strengthen the norms at broader

levels of social organization. Examinations such as these could be carried out through multilevel studies of relationship norm strength in different countries or states, and using Gelfand et al.'s (2011) or Harrington and Gelfand's (2014) estimates of tightness-looseness values as a higher-level predictor. Alternatively, one could coopt the relationship norm strength priming procedures used in Study 5, and adapt them for tightness-looseness, in order to study the two variables' potentially mutually causal association.

### **Longitudinal examinations of relationship norm strength.**

Many of the secondary correlates of relationship norm strength, studied herein, were difficult to interpret, as it seems likely that relationship norm strength functions as either the cause or effect of these other variables. Norm manageability, for example, was found to be negatively associated with rates of relationship conflict. Partners may fight because of a lack of understanding of what their relationship norms entail, and such arguments may also undermine a partner's sense of manageability of the very same norms. Furthermore, over time, the direction of this relationship might alter: Conflict might be cross-sectionally correlated with low manageability, but over time, conflict might lead partners to attempt to tighten the norms in their relationship. The use of longitudinal methods is therefore poised to offer greater insight into the temporal precedence of correlates of relationship norm strength and changes in those relationships over time.

Even when experiments, such as Studies 4-5, provide some evidence of causality in relationship norm strength dynamics, longitudinal studies may still prove useful. In the mutually causal association between relationship norm strength and relationship quality, for example, it is not yet clear which relationship variable comes first. Though it is intuitive to suspect that partners must first want to affiliate with one another, before being willing to influence and be influenced by one another (Conley & Hardin, 2001; Festinger et al., 1950), it is alternatively

possible that a sense of normative agreement and mutual understanding may serve as an initial basis for romantic attraction (Byrne, 1961; Byrne & Blaylock, 1963).

Lastly, longitudinal examinations of relationship norm strength could be vital to understanding how, when, and why norm content changes (or does not change) in the course of a relationship. For example, relationships may frequently begin by employing an exchange norm of benefit giving (Clark & Mills, 1979), which may become stronger after some initial discussions of expectations. If a relationship were to eventually shift to a communal norm of benefit giving, the strength of the exchange norm would first need to be undermined, so that an alternative norm could be established to replace it. In this way, longitudinal studies of relationship norm strength could help to identify relationship norm “tipping points”, after which a given relationship might take on a very different relational trajectory.

#### **Dyadic examinations of relationship norm strength.**

I believe that some of the richest ground for examining relationship norm strength lies in the study of dyads. There are a number of exciting directions such research might explore, beyond simply re-testing the dyadic effects observed in Study 3. Norms function in part to help group members pursue collective goals by coordinating their action (Triandis, 1994). Thus, strong relationship norms may be particularly beneficial for a relationship when romantic couples are in pursuit of substantive collective goals (e.g., buying a house), or at the point of important relationship transitions that will place a large demand on their relationship (e.g., the birth of a child). The use of dyadic data analysis strategies like the APIM (Kenny et al., 2006) will allow greater insight into the unique impact of relationship norm strength for each partner. The dyadic approach may also benefit at times from a more norm-specific approach, as discussed earlier, particularly when certain relationship transitions are of focal interest.

#### **Teasing apart relationship norm strength factors.**

Finally, more basic research is needed to tease apart the associations between the relationship norm strength factors studied herein. Though these factors were *analytically determined* simultaneously (i.e., via EFA in Study 2), this does not mean that norm manageability, agreement, explicitness, and anticipated punishment *develop* simultaneously in a relationship. In other words, explicit negotiation of norms, for example, may naturally occur earlier in a relationship than a sense of norm manageability. Subsequently, there may be important individual and relational consequences for early experiences of particular relationship norm strength factors, in terms of how other norm strength factors develop in turn, or impact/are impacted by different relationship variables.

### **Conclusion**

The study of norms and close relationships represent two major pillars of social psychological scholarship. The study of the two topics in tandem, when it has occurred, has proven generative, but has been exclusively relegated to the study of the *content* of norms in close relationships. As I have proposed, and my five dissertation studies support, there is much to be gained, theoretically, empirically, and practically, by increasing the scope of relationship norm research to include the study of their *strength*, as well as their *content*. Attending to both of these features of relationship norms will help psychologists to expand their understanding of how, when, why, and in what domains close relationship partners influence each others thoughts, feelings, and behavior.

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Table 1

*Model Fit Indexes and Nested-Model Comparisons of 1-6 Factor Solutions (Study 2)*

Model (# of factors)	RMSEA (95% CI)	CFI	$\chi^2$ (df)	$\Delta\chi^2$ ( $\Delta$ df)	Improves Model?
1	.16, .18	.45	2577.28*** (252)	--	Yes
2	.11, .13	.76	1253.43*** (229)	1323.85*** (23)	Yes
3	.09, .10	.87	751.11*** (207)	502.32*** (22)	Yes
4 <sup>a</sup>	.07, .08	.92	523.37*** (186)	227.74*** (21)	Yes
5	.05, .06	.96	323.95*** (166)	199.42*** (20)	Yes
6	.04, .06	.98	253.38*** (147)	70.57*** (19)	Yes

<sup>a</sup> = selected final model. \*\*\*  $p < .001$ .

Table 2

*Geomin rotated factor loadings for the selected four-factor EFA solution (Study 2)*

Item #	Item Text	Ma*	Ag	Ex*	Pu	$h^2$
8	I am confused by many of the "rules" of our relationship	<b>.89</b>	<b>-.10</b>	.01	.01	.80
3	I feel overwhelmed by the number of "rules" in our relationship	<b>.80</b>	.03	-.07	-.02	.64
15	It feels like there are different "rules" for me and different "rules" for my partner	<b>.79</b>	-.03	<b>.10</b>	.02	.64
13	Some of the "rules" of our relationship seem to contradict one another	<b>.77</b>	-.05	-.02	-.01	.60
19	The "rules" of our relationship are ridiculous	<b>.76</b>	<b>-.17</b>	.04	.01	.61
6	I feel like our relationship has more "rules" than many other relationships I have been in or known of	<b>.73</b>	.05	-.04	.02	.54
1	I feel like our relationship has a lot of "rules"	<b>.66</b>	<b>.15</b>	<b>-.21</b>	.02	.50
12	Disagreements between my partner and I about the "rules" of our relationship occur frequently	<b>.66</b>	<b>-.13</b>	.03	.07	.46
4	The "rules" of our relationship are frequently on my mind	<b>.65</b>	.10	-.13	-.01	.45
18	I agree with most of the "rules" of our relationship	-.05	<b>.86</b>	<b>.17</b>	-.07	.78
11	My partner and I agree on the "rules" of our relationship	.02	<b>.84</b>	<b>-.15</b>	-.01	.73

17	The "rules" of our relationship are legitimate	-.06	<b>.78</b>	.12	.04	.63
14	The "rules" of our relationship are consistently applied to both my partner and me	-.02	<b>.66</b>	-.01	.05	.44
7	I feel like I clearly understand many of the "rules" of our relationship	-.08	<b>.64</b>	-.03	-.004	.42
9	My partner and I have talked openly about the "rules" of our relationship	.07	<b>.52</b>	<b>-.56</b>	.04	.59
10	My partner and I don't discuss the "rules" of our relationship; they are just understood	<b>.22</b>	.03	<b>.76</b>	-.05	.63
2	I don't feel like I have to worry about following too many "rules" in our relationship	<b>-.21</b>	<b>.17</b>	<b>.38</b>	.05	.22
5	I rarely think about the "rules" of our relationship	<b>-.16</b>	<b>.18</b>	<b>.32</b>	.09	.17
16	The "rules" of our relationship have not changed over time	.04	<b>.47</b>	<b>.28</b>	.03	.30
21	The consequences for breaking one of the "rules" of our relationship would be severe	.01	-.02	.06	<b>.95</b>	.91
24	My partner or I would be punished by the other for breaking one of the "rules" of our relationship	<b>.09</b>	-.03	.03	<b>.79</b>	.63
23	If my partner or I broke one of the "rules" of our relationship, it is likely our relationship would end.	-.05	-.01	-.04	<b>.77</b>	.60
20	If my partner or I broke one of the "rules" of our relationship, the other would be very upset	.03	<b>.19</b>	-.08	<b>.77</b>	.64
22	My partner and I don't really care if the other	<b>.28</b>	-.04	<b>.28</b>	<b>-.41</b>	.33

---

follows the "rules" of our relationship

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*Note.* Item text is from the long-term exclusive relationship version of the RNSQ. Boldfaced loading values indicates item loads significantly onto a given factor at the  $\alpha = .05$  level. Ma = Manageability factor; Ag = Agreement factor; Ex = Explicitness factor; Pu = Punishment factor;  $h^2$  = item communality.

\*Manageability and explicit factor require reverse scoring.

Table 3

*Latent Correlations between the Four RNSQ Factors (Study 2)*

	Manageable	Agreement	Explicitness	Punishment
Manageable	--	.36*	.28*	.20*
Agreement		--	-.02	.35*
Explicitness			--	.31*
Punishment				--

Table 4

*Item Composition of the Observed Subscales for the RNSQ (Study 3)*

Item #	Item Text	Manageable	Agreement	Explicitness	Punishment
1	I feel like our relationship has a lot of "rules" and expectations	X*			
2	I don't feel like I have to worry about following too many "rules" or expectations in our relationship			X*	
3	I feel overwhelmed by the number of "rules" and expectations in our relationship	X*			
4	The "rules" and expectations of our relationship are frequently on my mind	X*			
5	I rarely think about the "rules" and expectations of our relationship			X*	
6	I feel like our relationship has more "rules" and expectations than many other	X*			

7	relationships I have been in or known of I feel like I clearly understand many of the "rules" and expectations of our relationship		X	
8	I am confused by many of the "rules" and expectations of our relationship	X*		
9	My partner and I have talked openly about the "rules" and expectations of our relationship		X	X
10	My partner and I don't discuss the "rules" and expectations of our relationship; they are just understood			X*
11	My partner and I agree on the "rules" and expectations of our relationship		X	
12	Disagreements between my partner and I about the "rules" and expectations	X*		



	of our relationship occur frequently		
13	Some of the "rules" and expectations of our relationship seem to contradict one another	X*	
14	The "rules" and expectations of our relationship are consistently applied to both my partner and me		X
15	It feels like there are different "rules" and expectations for me, and different "rules" and expectations for my partner	X*	
16	The "rules" and expectations of our relationship have not changed over time		X
17	The "rules" and expectations of our relationship		X

18	are good I agree with most of the "rules" and expectations of our relationship		X
19	The "rules" and expectations of our relationship are ridiculous	X*	
20	If my partner or I broke one of the "rules" or expectations of our relationship, the other would be very upset		X
21	The consequences for breaking one of the "rules" or expectations of our relationship would be severe		X
22	My partner and I don't really care if the other follows the "rules" or expectations of our relationship		X*
23	If my partner or I broke one of the "rules" or		X

	expectations of our relationship, it is likely our relationship would end.	
24	My partner or I would be punished by the other for breaking one of the "rules" or expectations of our relationship	X

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*Note.* Xs indicate which items were averaged to form each subscale of the RNSQ (i.e., column).  
Items marked \* were reverse scored.

Table 5

*Actor and Partner Effects of Dyadic Associations (Study 3)*

Predictor	Outcome	Effect Type	Estimate
<b>Dyadic Associations Between RNSQ Factors and Relationship Quality</b>			
Manageability	Relationship Quality	Actor	0.22***
Manageability	Relationship Quality	Partner	0.07
Agreement	Relationship Quality	Actor	0.14*
Agreement	Relationship Quality	Partner	0.01
Explicitness	Relationship Quality	Actor	-0.01
Explicitness	Relationship Quality	Partner	-0.15*
Punishment	Relationship Quality	Actor	0.04
Punishment	Relationship Quality	Partner	-0.13*
<b>Dyadic Associations Between RNSQ Factors and Norm Compliance</b>			
Manageability	Compliance (Self)	Actor	0.36**
Manageability	Compliance (Self)	Partner	-0.23
Agreement	Compliance (Self)	Actor	0.60***
Agreement	Compliance (Self)	Partner	0.05
Explicitness	Compliance (Self)	Actor	0.07
Explicitness	Compliance (Self)	Partner	-0.01
Punishment	Compliance (Self)	Actor	0.30**
Punishment	Compliance (Self)	Partner	-0.36**
Manageability	Compliance (Partner)	Actor (M)	0.37*
Manageability	Compliance (Partner)	Partner (M)	0.70***
Manageability	Compliance (Partner)	Actor (F)	0.37*
Manageability	Compliance (Partner)	Partner (F)	-0.17
Agreement	Compliance (Partner)	Actor (M)	0.53***
Agreement	Compliance (Partner)	Partner (M)	-0.51*
Agreement	Compliance (Partner)	Actor (F)	0.71***
Agreement	Compliance (Partner)	Partner (F)	0.36**
Explicitness	Compliance (Partner)	Actor (M)	-0.02
Explicitness	Compliance (Partner)	Partner (M)	-0.59**
Explicitness	Compliance (Partner)	Actor (F)	-0.01
Explicitness	Compliance (Partner)	Partner (F)	0.02
Punishment	Compliance (Partner)	Actor	0.13
Punishment	Compliance (Partner)	Partner	-0.48**
<b>Exploratory Dyadic Analyses</b>			
Compliance (Self)	Relationship Quality	Actor	.09
Compliance (Self)	Relationship Quality	Partner	.03
Compliance (Partner)	Relationship Quality	Actor	.20*
Compliance (Partner)	Relationship Quality	Partner	.20 <sup>a</sup>
Compliance (Self)	Compliance (Partner)	Actor (bias)	0.71***
Compliance (Self)	Compliance (Partner)	Partner (accuracy)	-0.03

*Note.* All reported estimates are unstandardized. Actor and partner effects were constrained to equality for men and women.

<sup>a</sup>  $p = .07$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 6

*Geomin rotated factor loadings for four-factor exploratory solution (Study 4)*

Item #	Item Text	Ma*	Ex*	Ag	Pu	$h^2$
6	I feel like our relationship has more "rules" and expectations than many other relationships I have been in or known of	<b>.81</b>	<b>-.22</b>	.003	.04	.83
3	I feel overwhelmed by the number of "rules" and expectations in our relationship	<b>.80</b>	<b>-.23</b>	-.05	.01	.85
8	I am confused by many of the "rules" and expectations of our relationship	<b>.80</b>	.12	<b>-.11</b>	.03	.70
4	The "rules" and expectations of our relationship are frequently on my mind	<b>.79</b>	<b>-.37</b>	<b>.08</b>	<b>-.07</b>	.81
13	Some of the "rules" and expectations of our relationship seem to contradict one another	<b>.70</b>	-.004	<b>-.18</b>	.03	.70
12	Disagreements between my partner and I about the "rules" and expectations of our relationship occur frequently	<b>.65</b>	-.08	<b>-.20</b>	<b>.10</b>	.71
19	The "rules" and expectations of our relationship are ridiculous	<b>.65</b>	.07	<b>-.22</b>	<b>.16</b>	.72
22	My partner and I don't really care if the other follows the "rules" or expectations of our relationship	<b>.57</b>	<b>.45</b>	.03	<b>-.38</b>	.49
15	It feels like there are different "rules" and	<b>.54</b>	-.03	<b>-.27</b>	.06	.56

	expectations for me, and different "rules" and expectations for my partner					
1	I feel like our relationship has a lot of "rules" and expectations	<b>.52</b>	<b>-.54</b>	.08	-.03	.63
10	My partner and I don't discuss the "rules" and expectations of our relationship; they are just understood	<b>.27</b>	<b>.64</b>	.08	-.08	.35
5	I rarely think about the "rules" and expectations of our relationship	-.18	<b>.53</b>	<b>.24</b>	.11	.47
2	I don't feel like I have to worry about following too many "rules" or expectations in our relationship	-.04	<b>.47</b>	<b>.34</b>	-.04	.42
9	My partner and I have talked openly about the "rules" and expectations of our relationship	.11	<b>-.52</b>	<b>.40</b>	.13	.42
17	The "rules" and expectations of our relationship are good	.02	.06	<b>.90</b>	-.05	.83
18	I agree with most of the "rules" and expectations of our relationship	-.04	.07	<b>.88</b>	.01	.82
11	My partner and I agree on the "rules" and expectations of our relationship	-.08	-.05	<b>.77</b>	.004	.67
14	The "rules" and expectations of our relationship are consistently applied to both my partner and me	.03	-.04	<b>.75</b>	.08	.54
7	I feel like I clearly understand many of the "rules"	-.13	<b>-.27</b>	<b>.55</b>	.08	.40

	and expectations of our relationship					
16	The "rules" and expectations of our relationship have not changed over time	.06	<b>.18</b>	<b>.35</b>	.12	.17
21	The consequences for breaking one of the "rules" or expectations of our relationship would be severe	-.03	.02	-.03	<b>.87</b>	.73
23	If my partner or I broke one of the "rules" or expectations of our relationship, it is likely our relationship would end.	.08	<b>.13</b>	.05	<b>.73</b>	.54
24	My partner or I would be punished by the other for breaking one of the "rules" or expectations of our relationship	.10	-.10	.02	<b>.73</b>	.66
20	If my partner or I broke one of the "rules" or expectations of our relationship, the other would be very upset	.00	<b>-.14</b>	<b>.19</b>	<b>.68</b>	.59

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*Note.* Boldfaced loading values indicates item loads significantly onto a given factor at the  $\alpha = .05$  level. Ma = Manageability factor; Ex = Explicitness factor; Ag = Agreement factor; Pu = Punishment factor;  $h^2$  = item communality.

\*Manageability and explicit factor require reverse scoring.

Table 7

*Meta-analyzed Factor Loadings for the Four RNSQ Factors*

Item #	Manageable*	Agreement	Explicitness*	Punishment
	(95% CI)	(95% CI)	(95% CI)	(95% CI)
3	<b>.78</b>	.03	<b>-.17</b>	.002
	<b>(.73, .84)</b>	(-.11, .04)	<b>(-.28, -.06)</b>	(-.04, .04)
8	<b>.74</b>	<b>-.18</b>	.03	.02
	<b>(.64, .85)</b>	<b>(-.29, -.06)</b>	(-.02, .08)	(-.02, .06)
6	<b>.74</b>	-.02	<b>-.20</b>	.02
	<b>(.68, .80)</b>	(-.07, .04)	<b>(-.37, -.01)</b>	(-.02, .06)
19	<b>.71</b>	<b>-.21</b>	.05	.04
	<b>(.65, .78)</b>	<b>(-.27, -.15)</b>	(-.002, .10)	(-.06, .15)
13	<b>.70</b>	<b>-.20</b>	-.01	.02
	<b>(.61, .79)</b>	<b>(-.38, -.03)</b>	(-.05, .04)	(-.03, .06)
4	<b>.66</b>	.04	<b>-.36</b>	-.03
	<b>(.55, .79)</b>	(-.02, .11)	<b>(-.63, -.09)</b>	(-.07, .01)
12	<b>.66</b>	<b>-.18</b>	-.02	<b>.07</b>
	<b>(.60, .71)</b>	<b>(-.25, -.12)</b>	(-.07, .04)	<b>(.02, .12)</b>
15	<b>.58</b>	<b>-.25</b>	-.01	.04
	<b>(.36, .80)</b>	<b>(-.48, -.01)</b>	(-.13, .11)	(-.01, .09)
1	<b>0.58</b>	<b>.09</b>	<b>-.38</b>	.05
	<b>(.46, .69)</b>	<b>(.03, .15)</b>	<b>(-.56, -.19)</b>	(-.06, .16)
22	<b>.47</b>	.02	<b>.31</b>	<b>-.41</b>



	<b>(.28, .66)</b>	<b>(-.01, .04)</b>	<b>(.18, .44)</b>	<b>(-.49, -.33)</b>
18	<b>-.07</b>	<b>.84</b>	<b>.07</b>	<b>-.02</b>
	<b>(-.12, -.02)</b>	<b>(.80, .88)</b>	<b>(.02, .12)</b>	<b>(-.06, .02)</b>
17	<b>-.03</b>	<b>.83</b>	<b>.07</b>	<b>-.03</b>
	<b>(-.08, .02)</b>	<b>(.77, .89)</b>	<b>(.02, .13)</b>	<b>(-.09, .04)</b>
11	<b>-.04</b>	<b>.77</b>	<b>-.03</b>	<b>.04</b>
	<b>(-.12, .04)</b>	<b>(.67, .87)</b>	<b>(-.08, .02)</b>	<b>(-.06, .13)</b>
14	<b>-.01</b>	<b>.72</b>	<b>-.03</b>	<b>.03</b>
	<b>(-.07, .05)</b>	<b>(.66, .77)</b>	<b>(-.08, .02)</b>	<b>(-.05, .10)</b>
7	<b>-.04</b>	<b>.65</b>	<b>-.11</b>	<b>.02</b>
	<b>(-.12, .03)</b>	<b>(.56, .75)</b>	<b>(-.25, .03)</b>	<b>(-.04, .07)</b>
9	<b>.04</b>	<b>.48</b>	<b>-.48</b>	<b>.08</b>
	<b>(-.02, .10)</b>	<b>(.40, .57)</b>	<b>(-.58, -.38)</b>	<b>(.01, .14)</b>
16	<b>.05</b>	<b>.40</b>	<b>.25</b>	<b>.07</b>
	<b>(-.02, .12)</b>	<b>(.32, .48)</b>	<b>(.17, .33)</b>	<b>(-.002, .14)</b>
10	<b>.25</b>	<b>.03</b>	<b>.61</b>	<b>-.03</b>
	<b>(.15, .35)</b>	<b>(-.03, .08)</b>	<b>(.45, .77)</b>	<b>(-.09, .03)</b>
5	<b>-.13</b>	<b>.21</b>	<b>.48</b>	<b>.07</b>
	<b>(-.23, -.03)</b>	<b>(.12, .30)</b>	<b>(.33, .63)</b>	<b>(.002, .13)</b>
2	<b>-.06</b>	<b>.27</b>	<b>.44</b>	<b>-.05</b>
	<b>(-.19, .07)</b>	<b>(.16, .39)</b>	<b>(.37, .51)</b>	<b>(-.18, .07)</b>
21	<b>.004</b>	<b>-.01</b>	<b>.02</b>	<b>.91</b>
	<b>(-.03, .04)</b>	<b>(-.06, .05)</b>	<b>(-.04, .08)</b>	<b>(.85, .96)</b>

20	-06	.10	-.05	<b>.75</b>
	(-.22, .10)	(-.07, .28)	(-.12, .02)	<b>(.71, .80)</b>
23	.08	.03	.05	<b>.75</b>
	(-.08, .24)	(-.02, .08)	(-.05, .16)	<b>(.70, .80)</b>
24	<b>.10</b>	-.02	-.01	<b>.75</b>
	<b>(.03, .16)</b>	(-.06, .03)	(-.08, .05)	<b>(.70, .80)</b>

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*Note.* Factor loadings and 95% CIs that are bolded are significant at the  $p < .05$  level. Item content can be found in Tables 2, 5, and/or 7.

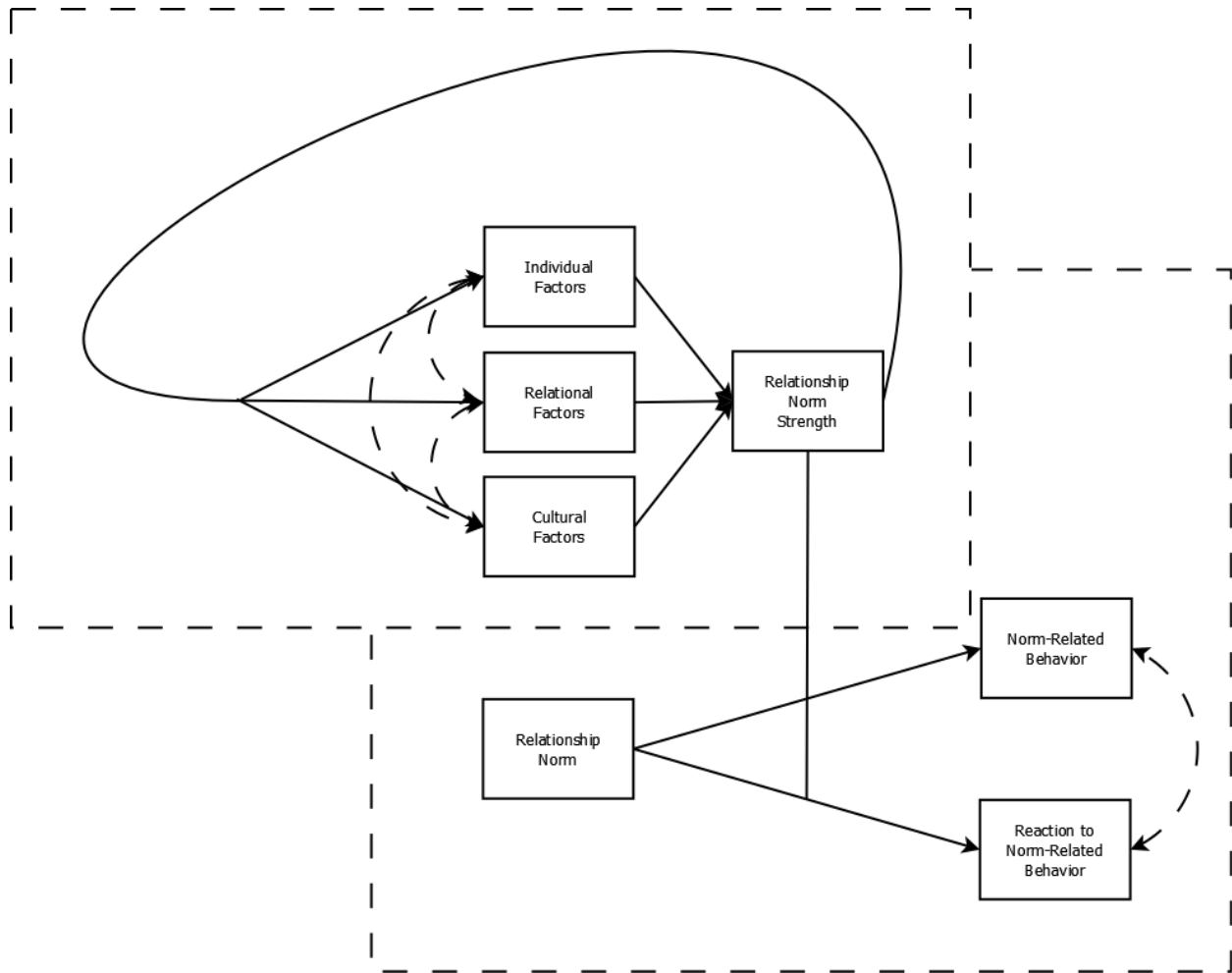
\*Factor loadings reversed as to indicate manageability and explicitness, as opposed to unmanageability, and implicitness.

Table 8

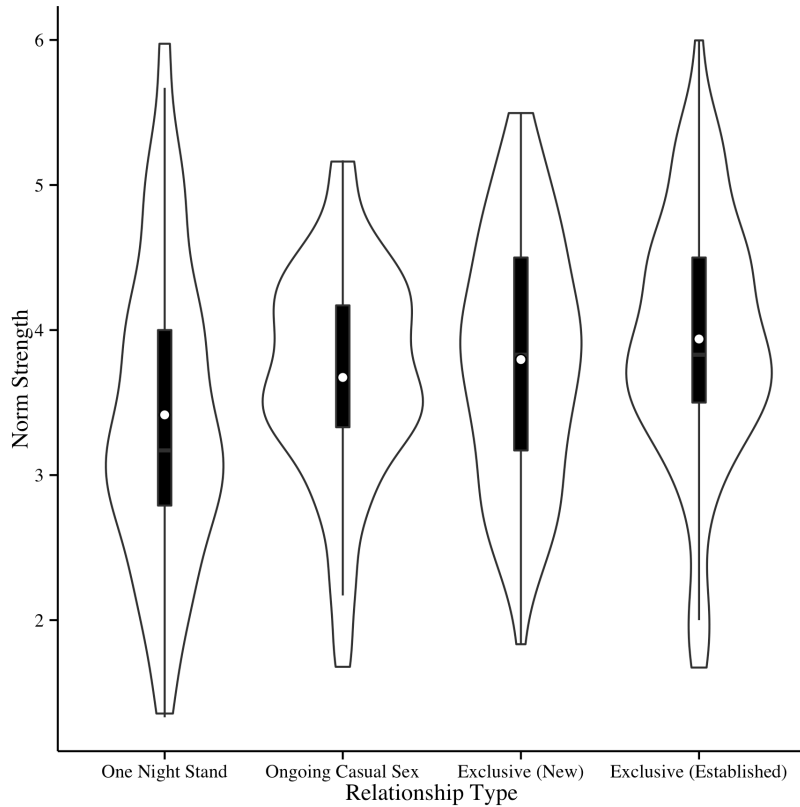
*Meta-analyzed RNSQ Factor Correlations*

	Manageability	Agreement	Explicitness	Punishment
Manageability	1			
Agreement	<b>.47</b> <b>95% CI: .35, .58</b>	1		
Explicitness	<b>-.24</b> <b>95% CI: -.33, -.14</b>	<b>-.08</b> <b>95% CI: -.19, .02</b>	1	
Punishment	<b>-.28</b> <b>95% CI: -.39, -.16</b>	<b>.12</b> <b>95% CI: -.10, .35</b>	<b>.28</b> <b>95% CI: .20, .35</b>	1

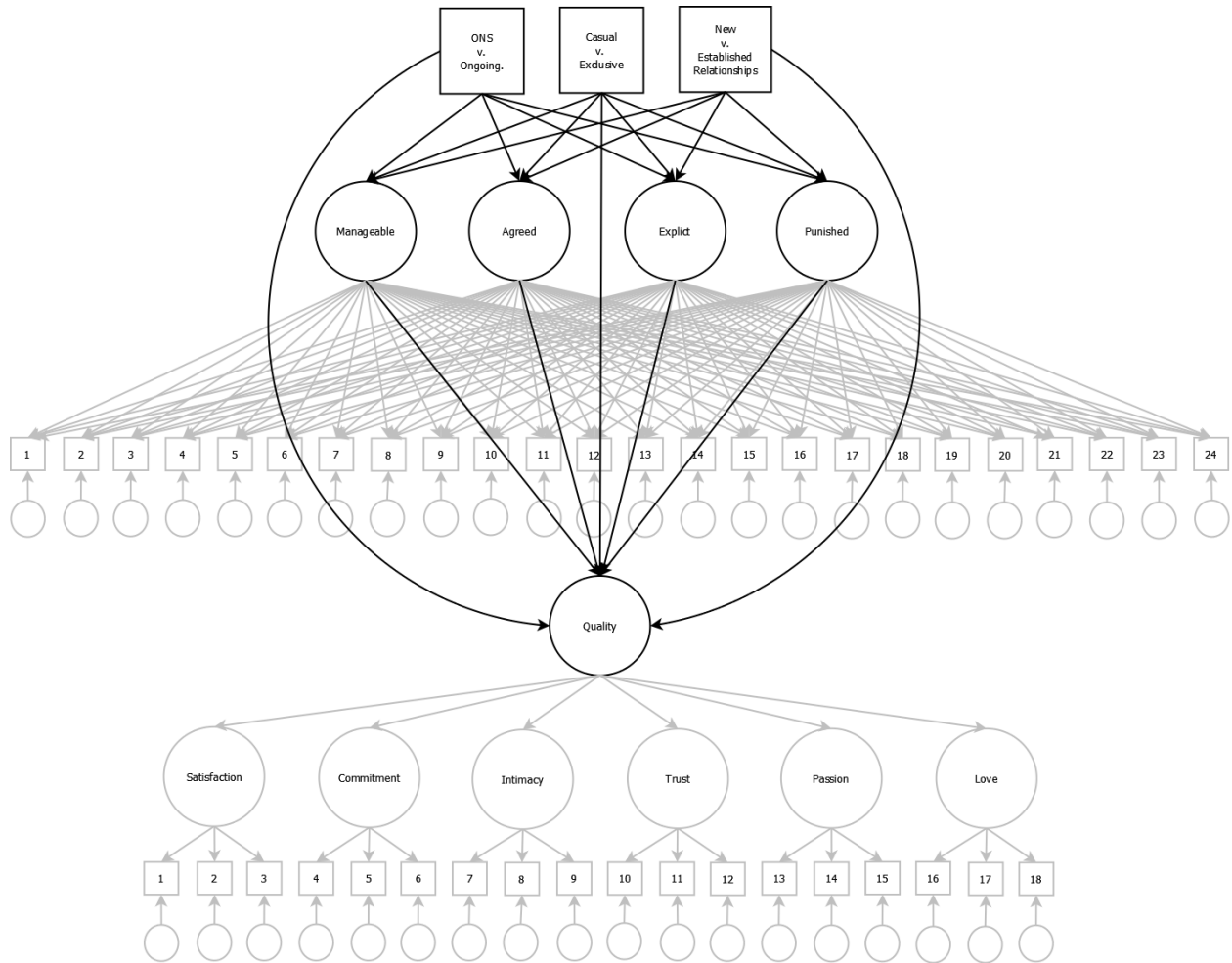
*Note.* Bolded correlations and 95% confidence intervals indicate that factors are significantly correlated at the  $p < .05$  level.



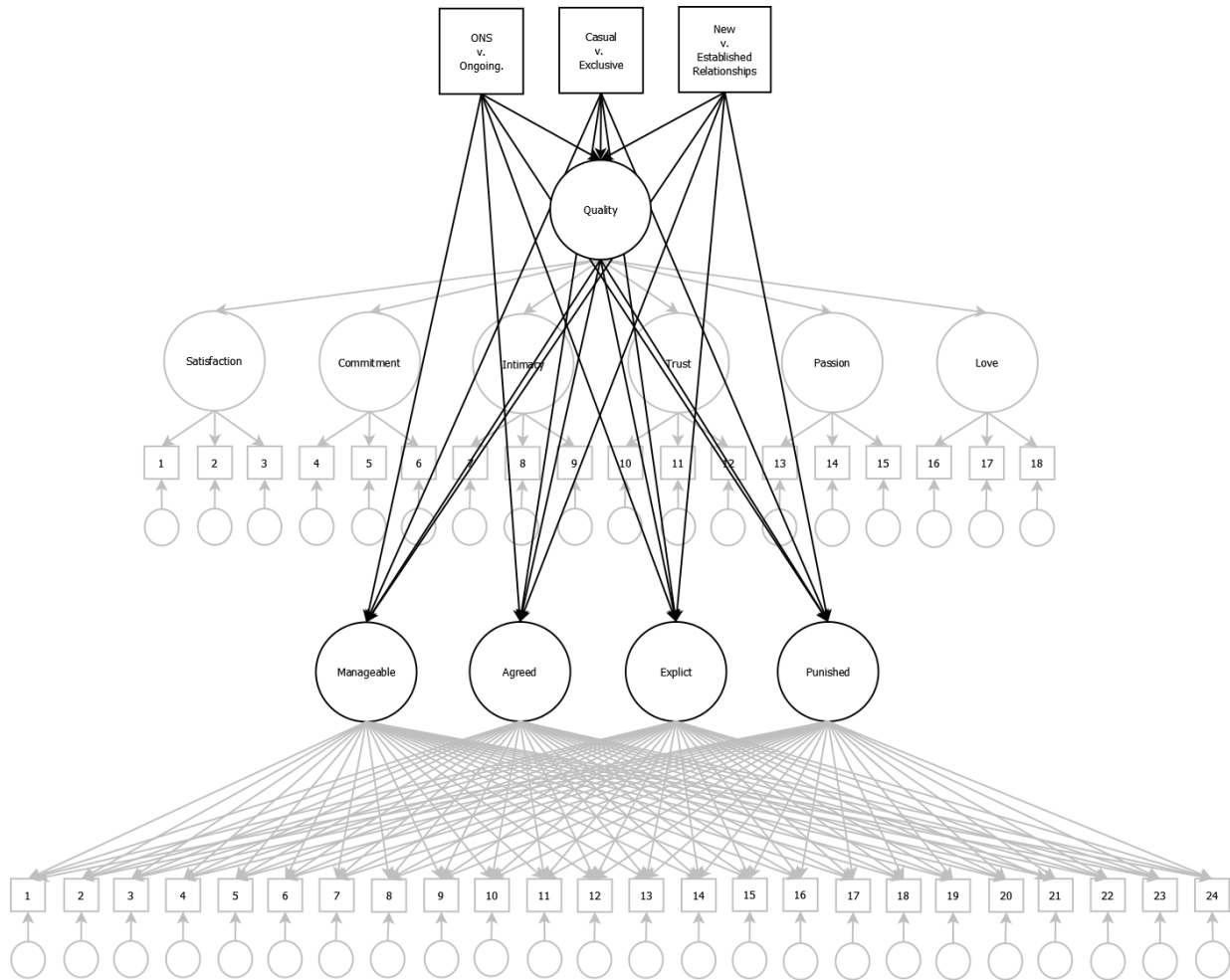
*Figure 1.* A model of relationship norm strength. The top box (indicated by dashed line) encapsulates the *mutual constitution of relationships* hypothesis, in which relationship norm strength is posited as having a reciprocal causal association with various individual, relational, and cultural-level factors. The bottom box encapsulates the *norm amplification hypothesis*, in which relationship norm strength is posited to moderate the association between norm content and norm-related behavior, and the association between norm content and reactions to norm-related behavior.



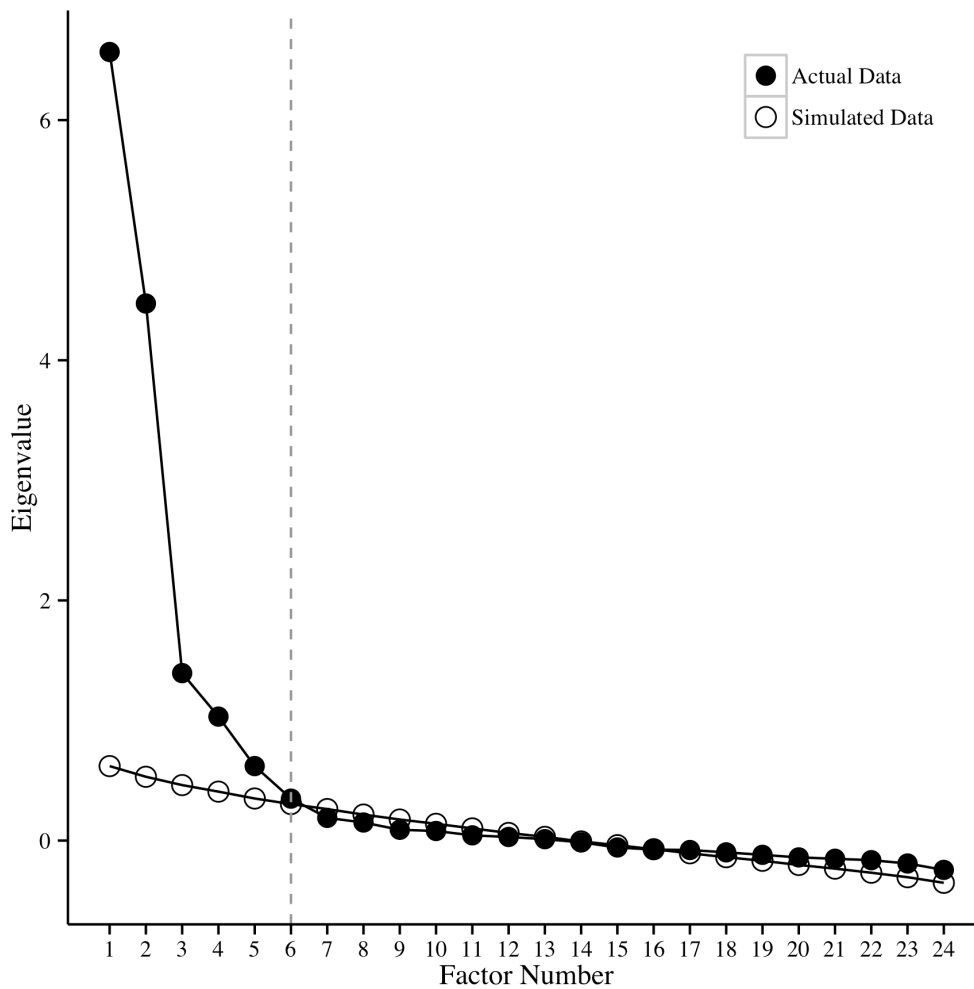
*Figure 2.* Violin plot of perceived norm strength across four different types of sexual relationships. A violin plot consists of a conventional box-and-whiskers plot with the mean demarcated by a white dot, and a smoothed frequency distribution of responses mirrored on both the left and right side of the box-and-whiskers plot.



*Figure 3.* Initial ESEM from Study 2. Observed relationship type contrasts were specified as indirectly associated with the confirmatory second-order latent relationship quality variable, through changes in the four exploratory RNSQ latent variables.

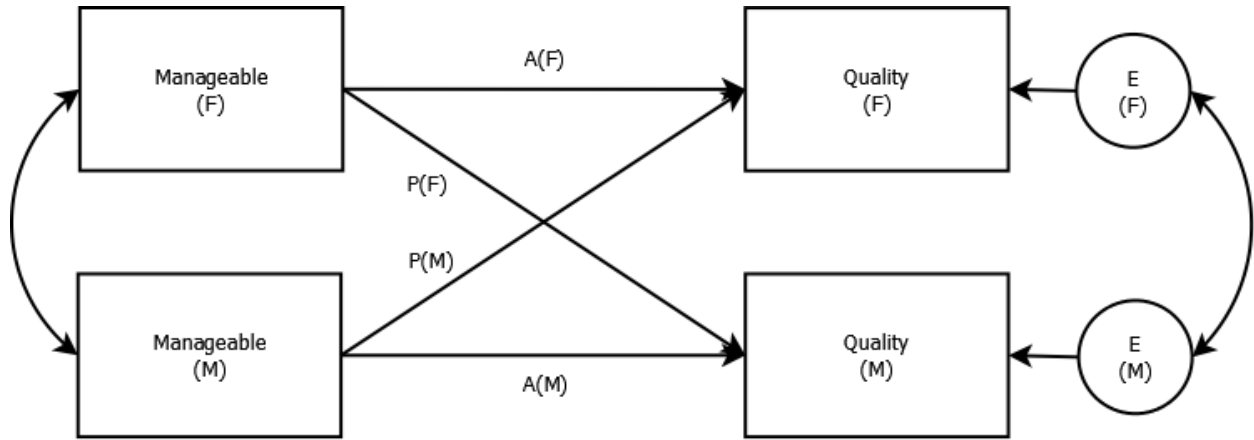


*Figure 4.* Second ESEM from Study 2. Observed relationship type contrasts were specified as indirectly associated with the four exploratory RNSQ latent variables, through changes in the confirmatory second-order latent relationship quality variable.

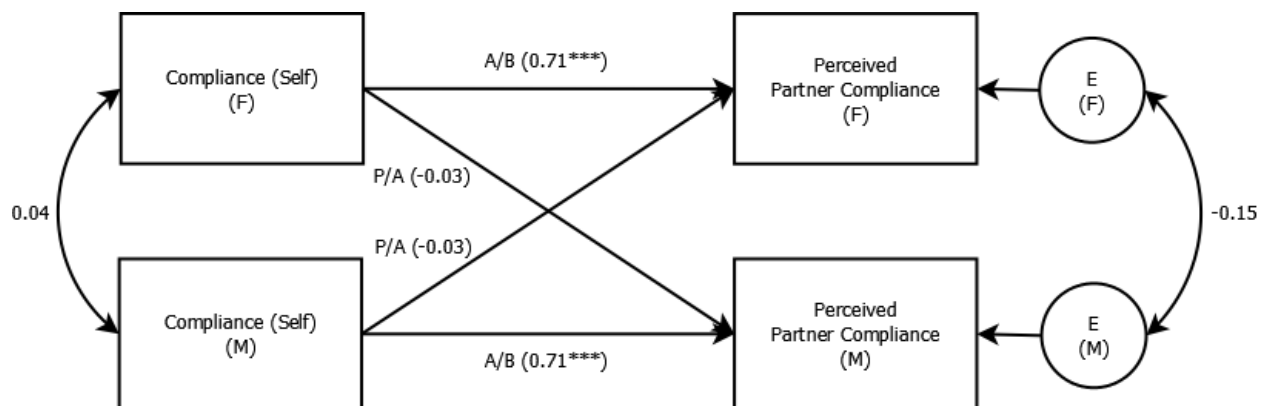


*Figure 5.* Parallel analysis of RNSQ data from Study 2. Black dots represent eigenvalues of observed factors, whereas white dots represent mean eigenvalues from 50 simulated datasets. Analysis suggests a maximum of 6 factors to be extracted (dashed line).



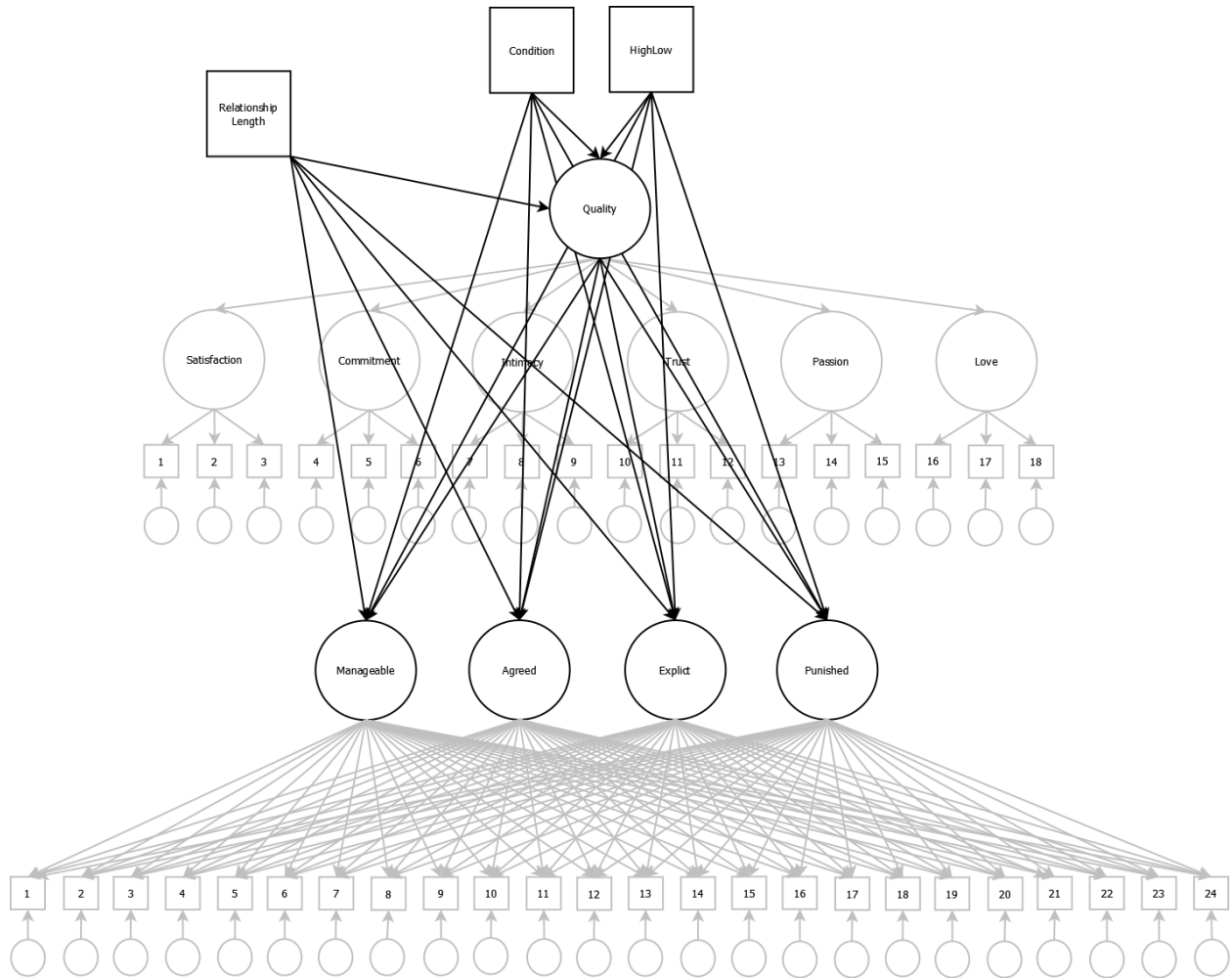


*Figure 6.* An example actor-partner interdependence model (APIM), examining the dyadic influence of norm manageability on relationship quality. Variables marked (F) indicate ratings from female members of a dyad; variables marked (M) indicate ratings from male members of a dyad. Error terms of the outcome variable (marked E) are correlated between partners to account for the dependency in observations. Actor effects (marked A) regress an individual's outcome variable on their own predictor variable; partner effects (marked P) regress an individual's partner's outcome variable on that individual's predictor variable.

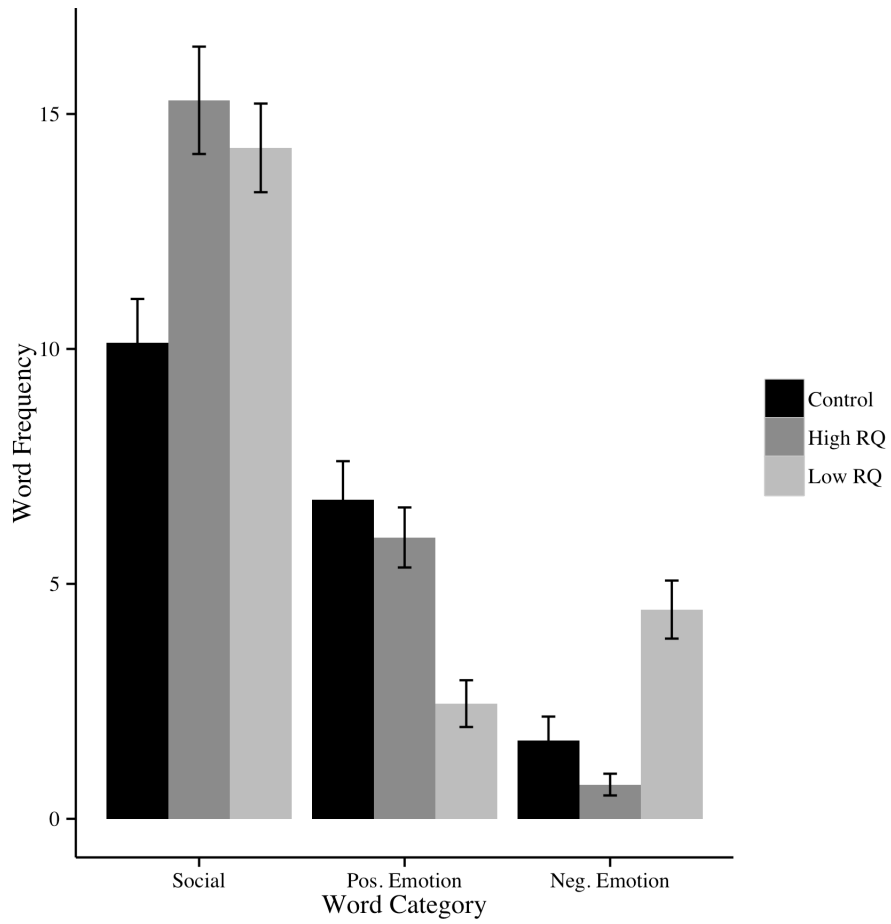


*Figure 7.* APIM of accuracy and bias in relationship perception of norm compliance. Paths are marked to indicate both their actor/partner and accuracy/bias relevance, to ensure model clarity; A/B = Actor/Bias effect; P/A = Partner/Accuracy effect. Actor and partner effects have been constrained to equivalency between male and female partners.

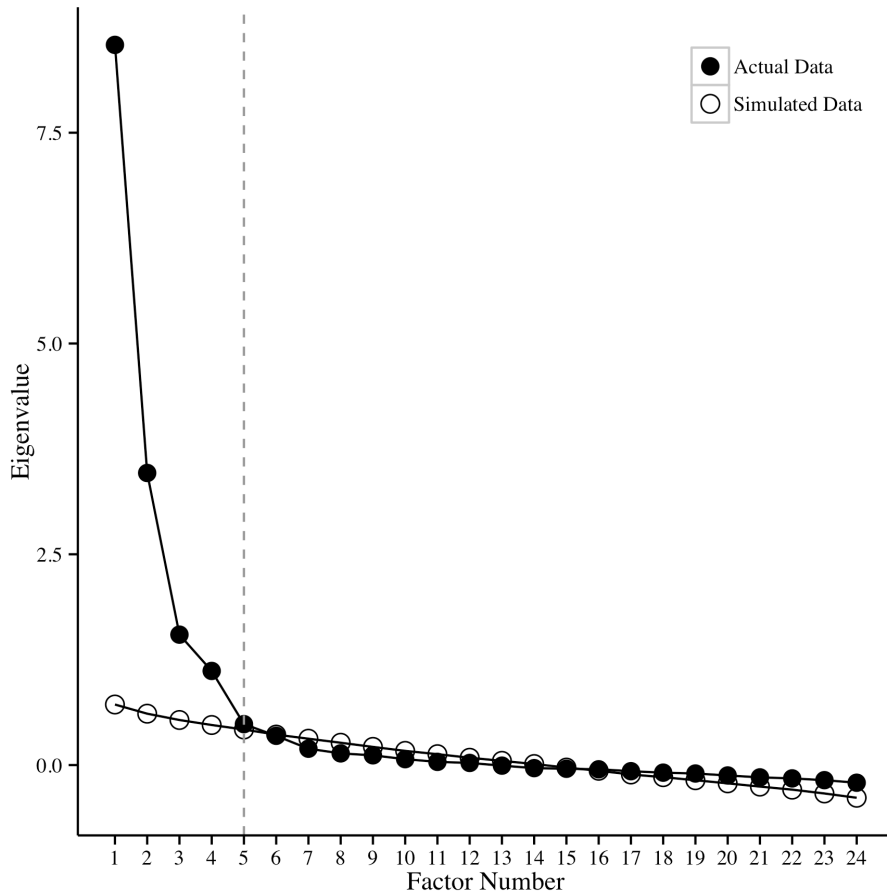
\*\*\*  $p < .001$ .



*Figure 8.* Experimental ESEM from Study 4. Experimental contrasts were specified as indirectly affecting the four latent exploratory RNSQ factors, through changes in levels of the second-order latent confirmatory relationship quality variable.



*Figure 9.* Mean frequencies and 95% confidence intervals for LIWC word categories, by relationship quality priming condition.



*Figure 10.* Parallel analysis of RNSQ data from Study 4. Black dots represent eigenvalues of observed factors, whereas white dots represent mean eigenvalues from 50 simulated datasets. Analysis suggests a maximum of 5 factors to be extracted (dashed line).

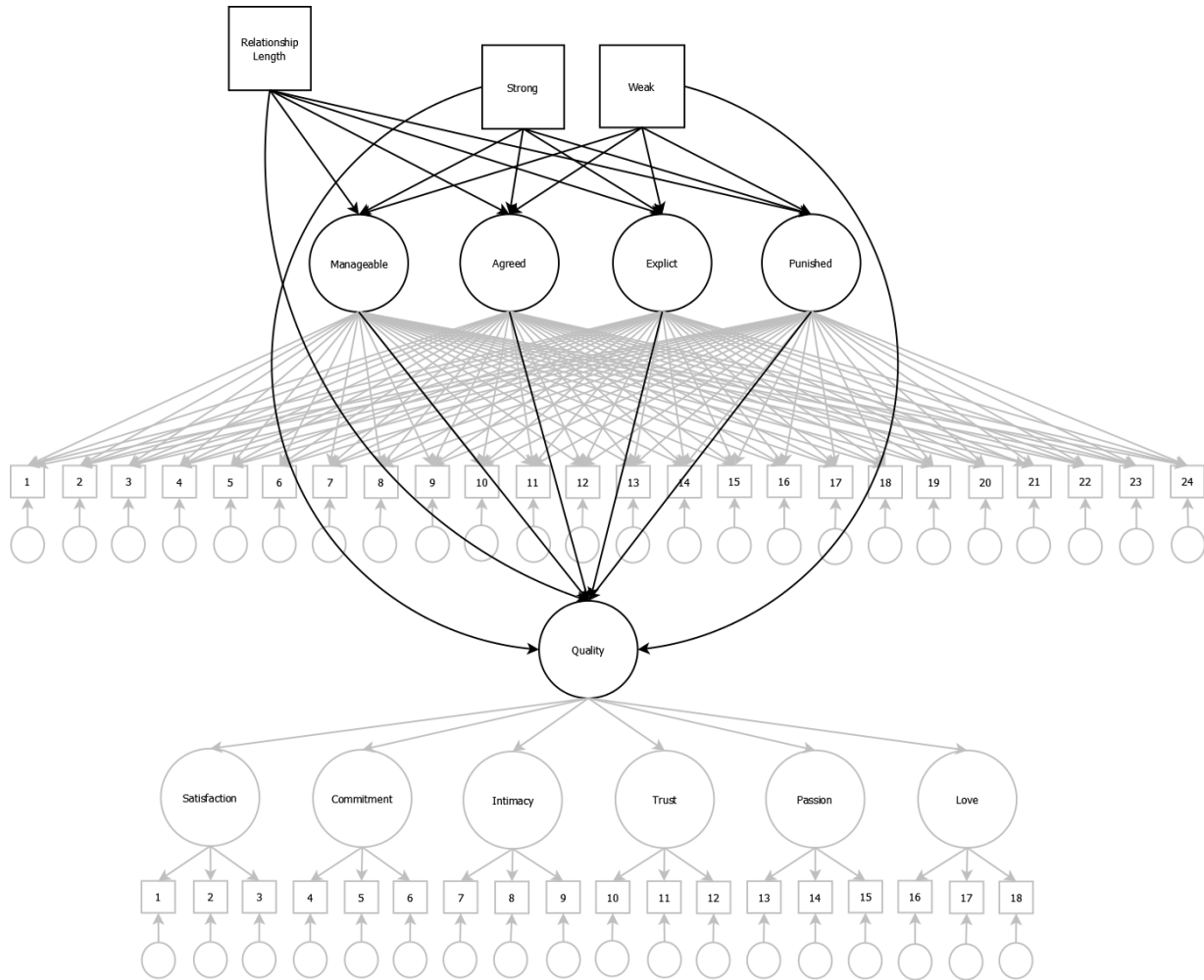
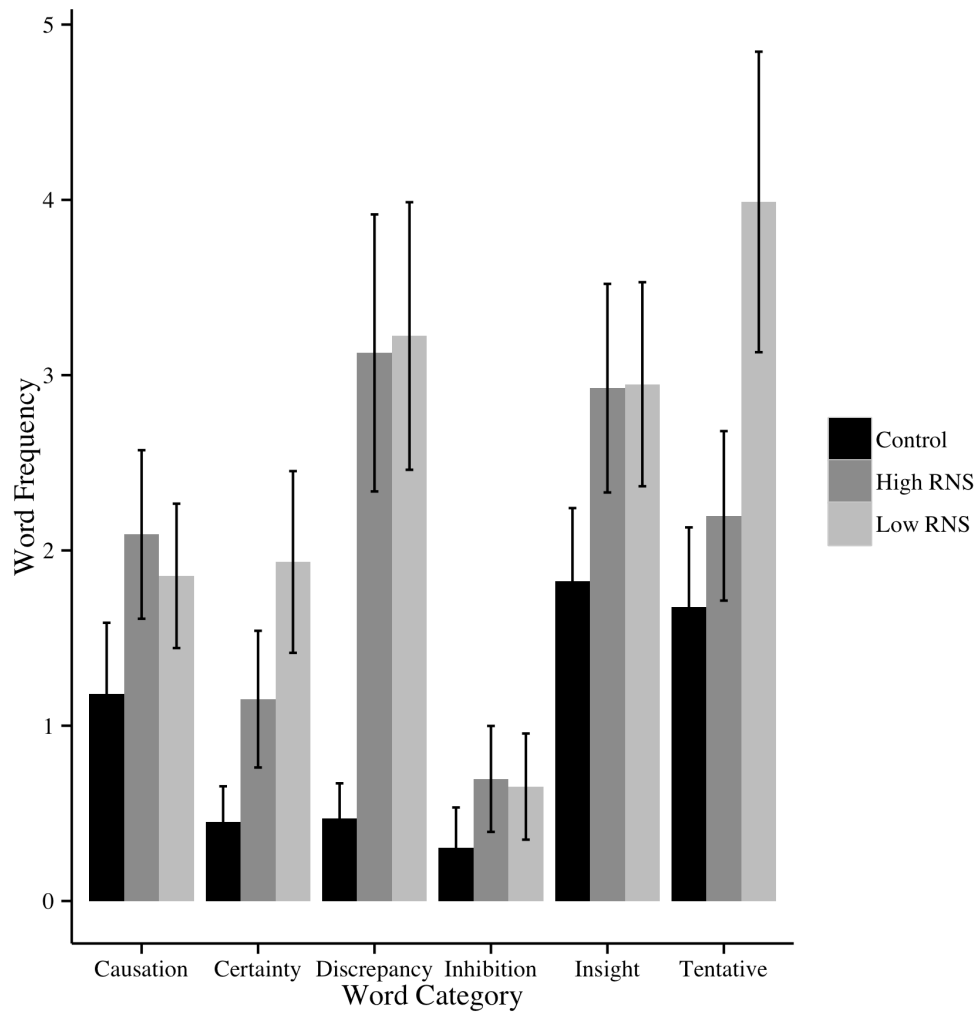


Figure 11. Experimental ESEM from Study 5. Experimental dummy variables were specified as indirectly affecting the second-order latent confirmatory relationship quality variable, through changes in the four latent exploratory RNSQ factors.



*Figure 12.* Mean frequencies and 95% confidence intervals for LIWC word categories, by relationship norm strength priming condition.

## Appendices

### Appendix A: Materials of Study 1-5

#### Appendix A1: Study 1 Materials.

What is your gender?

- Male
- Female
- Gender variant (please specify) \_\_\_\_\_

What is your age? (in years, e.g., 19)

Sexual Orientation:

- Homosexual
- Heterosexual
- Bisexual
- Other (please specify) \_\_\_\_\_

What is your current relationship status? (check all that apply)

- Dating multiple persons
- Engaged
- Dating one person exclusively
- Cohabiting/living with someone
- Not currently involved with anyone
- Divorced
- Have never had a sexual relationship
- Widowed
- Married (if so, how many years?) \_\_\_\_\_

How many different romantic relationship partners have you had?

What is the total number of years of formal education (including grade school) that you have received?



How religious are you?

	1 (Not at all religious)	2	3	4 (Moderately religious)	5	6	7 (Extremely religious)
I am...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How would you describe your ethnic background? (check all that apply)

- African American
- Asian American
- European American (non-hispanic)
- Hispanic American
- Native American
- Other \_\_\_\_\_

Indicate whether you have engaged in the following behaviors (check all that apply)

- Kissing
- Stimulating someone's genitals
- Having someone stimulate your genitals
- Performing oral sex
- Receiving oral sex
- Penile-vaginal intercourse
- Used a condom for penile vaginal intercourse
- Performing anal sex
- Receiving anal sex
- Masturbation
- Having an orgasm with another person
- Having an orgasm through masturbation

How many sexual partners have you had, with whom you engaged in sexual behaviors involving genital contact?



<p>behave</p> <p>In this situation, if someone acts in an inappropriate way, their partner will strongly disapprove</p> <p>People in this situation almost always follow the unwritten rules</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What are some things that people should ALWAYS do in this situation?

What are some things that people should NEVER do in this situation?



<p>want to behave</p> <p>In this situation, if someone acts in an inappropriate way, their partner will strongly disapprove</p> <p>People in this situation almost always follow the unwritten rules</p>	○	○	○	○	○	○
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What are some things that people should ALWAYS do in this situation?

What are some things that people should NEVER do in this situation?



<p>want to behave</p> <p>In this situation, if someone acts in an inappropriate way, their partner will strongly disapprove</p> <p>People in this situation almost always follow the unwritten rules</p>	○	○	○	○	○	○
	○	○	○	○	○	○

What are some things that people should ALWAYS do in this situation?

What are some things that people should NEVER do in this situation?





<p>want to behave</p> <p>In this situation, if someone acts in an inappropriate way, their partner will strongly disapprove</p> <p>People in this situation almost always follow the unwritten rules</p>	○	○	○	○	○	○
--	---	---	---	---	---	---

What are some things that people should ALWAYS do in this situation?

What are some things that people should NEVER do in this situation?

### Appendix A2: Study 2 Materials

Which of the following options best captures the type of relationship you have/had with your partner

- A one night stand (i.e., they were a relative stranger to you, and you ceased contact after your sexual encounter was done)
- A regular casual sex partner (i.e., this is not the first time you have been sexual with this person, but you do not have an exclusive relationship with them)
- A new romantic partner (i.e., you haven't been in a relationship with this person long, and you have an exclusive relationship with them)
- An established romantic partner (i.e., you have been in a relationship with this person for awhile, and you have an exclusive relationship with them)
- A combination of two or more of the descriptions above
- Other (please specify) \_\_\_\_\_

Please describe the type of relationship you had/have with your partner, in your own words

How would you describe your partner's gender?

Approximately how many days has it been since you last engaged in sexual behavior with this partner?

Please check all of the behaviors that you engaged in with this partner the last time you engaged in sexual behavior together

- Kissing
- Stimulating your partner's genitals
- Your partner stimulating your genitals
- Performing oral sex on your partner
- Receiving oral sex from your partner
- Penile-vaginal intercourse
- Used a condom for penile vaginal intercourse
- Performing anal sex on your partner
- Receiving anal sex from your partner
- Experiencing an orgasm
- Your partner experiencing an orgasm

Have you had subsequent sexual interactions with this person since your one night stand?

- Yes
- No

Did you hope that your one night stand partner would eventually become a romantic partner?

- Yes
- No

How similar do you think you and your recent sexual partner are, in general?

	1	2	3	4	5	6	7
Not at all similar: Very similar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How similar do you think you and your recent sexual partner are, with respect to your beliefs about romantic and sexual relationships?

	1	2	3	4	5	6	7
Not at all similar: Very similar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you and your recent sexual partner share any assets (e.g., money, belongings, property, etc.) or responsibilities (e.g., financial, children, pets, etc.)?

- Yes
- No

How much of your assets/responsibilities do you share with your recent sexual partner?

	1	2	3	4	5	6	7
None of my assets/responsibilities are shared: Almost all of my assets/responsibilities are shared	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We are interested in learning more about the kind of relationship you had with your recent sexual partner. In this section of our survey, we are particularly interested in the "rules" that may have been in place in your relationship with your sexual partner, regarding your relationship and sexual conduct. In other words, there may have been things you and/or your partner felt like you were expected to do, or forbidden from doing in the context of your relationship. Furthermore, these "rules" may have come about because of an explicit conversation between you and your partner, or alternatively, you may have simply assumed they were in place and never actually talked to your partner about them.

Please describe some of the "rules" that were in place for your relationship with your recent sexual partner. There may have been "rules" about particular roles you and your partner were expected to take on, how you and your partner should communicate or have sex, or how you should interact with others who are not a part of your relationship. For example, in some relationships, there is a "rule" prohibiting relationship partners from having sex with other people, although this "rule" may or may not have been in place in your relationship. Please describe as many of the "rules" for your relationship with your recent sexual partner as you can.



















What is your age (e.g., 18)?

How would you describe your gender?

How would you describe your sexual orientation?

- Gay/Lesbian
- Heterosexual
- Bisexual
- Asexual/other (please specify) \_\_\_\_\_

How would you describe your ethnicity?

- Black/African-American
- Asian
- Hispanic/Latino/Latina
- White/Caucasian
- Other (please specify) \_\_\_\_\_

Approximately how many romantic relationships have you been in?

Approximately how many sexual partners have you had, with whom you have engaged in sexual behaviors involving genital contact (yours or theirs)?

When using Mechanical Turk to collect data, it is relatively difficult to get data from people in different sexual relationships. This link tried to recruit those who recently had a one night stand. We realize some participants may mistakenly complete this study but not had a one night stand. In the space below please indicate the type of sexual relationship you had with your recent sexual partner. You will still get paid if you were not in a one night stand; this is just to ensure our data are as accurate as possible.

- A one night stand (i.e., they were a relative stranger to you, and you ceased contact after your sexual encounter was done)
- A regular casual sex partner (i.e., this is not the first time you have been sexual with this person, but you do not have an exclusive relationship with them)
- A new romantic partner (i.e., you haven't been in a relationship with this person long, and you have an exclusive relationship with them)
- An established romantic partner (i.e., you have been in a relationship with this person for awhile, and you have an exclusive relationship with them)
- A combination of two or more of the descriptions above
- Other (please specify) \_\_\_\_\_

**Appendix A3: Study 3 Materials**













<p>expectations of our relationship</p> <p>My partner and I don't discuss the "rules" and expectations of our relationship; they are just understood</p> <p>My partner and I agree on the "rules" and expectations of our relationship</p> <p>Disagreements between my partner and I about the "rules" and expectations of our relationship occur frequently</p> <p>Some of the "rules" and expectations of our relationship seem to contradict one another</p> <p>The "rules" and expectations</p>	○	○	○	○	○	○	○
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relationship							
My partner would be reluctant to break the “rules” and expectations of our relationship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My partner has regularly broken the “rules” and expectations of our relationship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What is your age (e.g., 18)?

How would you describe your gender?

How would you describe your sexual orientation?

- Gay/Lesbian
- Heterosexual
- Bisexual
- Asexual/other (please specify) \_\_\_\_\_



How would you describe your ethnicity?

- Black/African-American
- Asian
- Hispanic/Latino/Latina
- White/Caucasian
- Other (please specify) \_\_\_\_\_

What is your current socio-economic bracket?

- Upper Class
- Upper-Middle Class
- Middle Class
- Lower-Middle Class
- Lower Class

What is your total number of years of formal education (including grade school) in years:

Approximately how many romantic relationships have you been in?

Approximately how many sexual partners have you had, with whom you have engaged in sexual behaviors involving genital contact (yours or theirs)?

How long have you been in your romantic relationship, in months and years? (e.g., 1 year, 2 months; 0 years, 4 months, etc.)

### **Appendix A4: Study 4 Materials**

Please indicate which option best describes your current relationship status

- I am currently in a romantic relationship
- I am currently in an ongoing casual sex relationship (e.g., a "booty call" or "friends with benefits")
- I am not currently in any sort of romantic or sexual relationship

#### **High Relationship Quality Prime**

We are interested to know more about the current relationship that you are in. Many relationships experience ups and downs. Please think of a time when you strongly felt like you and your partner had a great, high-quality relationship. What were you and/or your partner doing, or what was happening, that made you feel this way? How would you describe your feelings towards your partner at that moment? Please describe as much about this memory as you can, in the space below—we are especially interested in learning about what your thoughts and feelings were at the time.

#### **Low Relationship Quality Prime**

We are interested to know more about the current relationship that you are in. Many relationships experience ups and downs. Please think of a time when things were not going well in your relationship and you questioned whether you and your partner had a good relationship. What were you and/or your partner doing, or what was happening, that made you feel this way? How would you describe your feelings towards your partner at that moment? Please describe as much about this memory as you can, in the space below—we are especially interested in learning about what your thoughts and feelings were at the time.

#### **Control Prime**

We are interested to know more about the current relationship that you are in. Please think about the last movie that you can recall seeing with your current partner. What was the movie about? How would you describe your feelings towards the movie? Please describe as much as you can about the movie you saw with your partner, in the space below—we are especially interested in learning about what your thoughts and feelings were at the time.











<p>expectations of our relationship</p> <p>My partner and I don't discuss the "rules" and expectations of our relationship; they are just understood</p> <p>My partner and I agree on the "rules" and expectations of our relationship</p> <p>Disagreements between my partner and I about the "rules" and expectations of our relationship occur frequently</p> <p>Some of the "rules" and expectations of our relationship seem to contradict one another</p> <p>The "rules" and expectations</p>	○	○	○	○	○	○	○
---	---	---	---	---	---	---	---







<p>relationship, it is likely our relationship would end.</p> <p>My partner or I would be punished by the other for breaking one of the "rules" or expectations of our relationship</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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How long have you been in your romantic relationship, in months and years? (e.g., 1 year, 2 months; 0 years, 4 months, etc.)

How often do you and your romantic partner get into arguments?

- Almost Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily
- Multiple times Daily

Are you and your partner...

	Yes	No
Married?	<input type="radio"/>	<input type="radio"/>
Living together?	<input type="radio"/>	<input type="radio"/>
Sharing a bank account?	<input type="radio"/>	<input type="radio"/>
Co-owners of a house?	<input type="radio"/>	<input type="radio"/>
Co-owners of a vehicle?	<input type="radio"/>	<input type="radio"/>
Parents?	<input type="radio"/>	<input type="radio"/>

What is your age (e.g., 18)?

How would you describe your gender?

How would you describe your sexual orientation?

- Gay/Lesbian
- Heterosexual
- Bisexual
- Asexual/other (please specify) \_\_\_\_\_

How would you describe your ethnicity?

- Black/African-American
- Asian
- Hispanic/Latino/Latina
- White/Caucasian
- Other (please specify) \_\_\_\_\_

What is your current socio-economic bracket?

- Upper Class
- Upper-Middle Class
- Middle Class
- Lower-Middle Class
- Lower Class

What is your total number of years of formal education (including grade school) in years:

In what US State do you currently live?

Approximately how many romantic relationships have you been in?

Approximately how many sexual partners have you had, with whom you have engaged in sexual behaviors involving genital contact (yours or theirs)?

When using Mechanical Turk to collect data, it is relatively difficult to get data from people in relationships. This link tried to recruit those who are in a romantic relationship. We realize some participants may mistakenly complete this study but not be in a romantic relationship. In the space below please indicate your relationship status. You will still get paid if you were not in a romantic relationship; this is just to ensure our data are as accurate as possible.

- I am currently in a romantic relationship
- I am currently in an ongoing casual sex relationship (e.g., a "boot call" or "friends with benefits")
- I am not currently in any sort of romantic or sexual relationship

Have you been truthful while responding to our survey questions? Again, this will have no bearing on your payment; this is just to ensure our data are as accurate as possible.

- Yes
- No

### **Appendix A5: Study 5 Materials**

Please indicate which option best describes your current relationship status

- I am currently in a romantic relationship
- I am currently in an ongoing casual sex relationship (e.g., a "booty call" or "friends with benefits")
- I am not currently in any sort of romantic or sexual relationship

#### **Strong Norms Prime**

We are interested to know more about the current relationship that you are in. We are especially interested in learning about the ‘rules’ and expectations you and your partner may have for one another in your relationship. For example, some couples might have ‘rules’ and expectations about parts of their sexual relationship, finances, family roles, or other topics. Please think about a time in your current relationship when you and your partner explicitly discussed or negotiated some of the ‘rules’ and expectations of your relationship, agreed upon them, understood them, and recognized that there would be serious consequences for breaking them. What were you thinking about and feeling during this moment in your relationship? Please describe as much about this memory as you can, in the space below—we are especially interested in learning about what your thoughts and feelings were at the time.

#### **Weak Norms Prime**

We are interested to know more about the current relationship that you are in. We are especially interested in learning about the ‘rules’ and expectations you and your partner may have for one another in your relationship. For example, some couples might have ‘rules’ and expectations about parts of their sexual relationship, finances, family roles, or other topics. Please think about a time in your current relationship when you felt as though you weren’t sure what the ‘rules’ and expectations of your relationship were. You may have also felt unsure of whether you and your partner agreed on what ‘rules’ and expectations should be in place, or what the consequences of breaking these ‘rules’ and expectations might be. What were you thinking about and feeling during this moment of uncertainty in your relationship? Please describe as much about this memory as you can, in the space below—we are especially interested in learning about what your thoughts and feelings were at the time.

**Control Prime**

We are interested to know more about the current relationship that you are in. Please think about the last movie that you can recall seeing with your current partner. What was the movie about? How would you describe your feelings towards the movie? Please describe as much as you can about the movie you saw with your partner, in the space below—we are especially interested in learning about what your thoughts and feelings were at the time.













<p>or expectations of our relationship, it is likely our relationship would end.</p> <p>My partner or I would be punished by the other for breaking one of the "rules" or expectations of our relationship</p>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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do you love your relationship partner?							
How much do you adore your relationship partner?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How much do you cherish your relationship partner?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

We have just a few more questions about your relationship and yourself.

How long have you been in your romantic relationship, in months and years? (e.g., 1 year, 2 months; 0 years, 4 months, etc.)

How often do you and your romantic partner get into arguments?

- Almost Never
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily
- Multiple times Daily



Are you and your partner...

	Yes	No
Married?	<input type="radio"/>	<input type="radio"/>
Living together?	<input type="radio"/>	<input type="radio"/>
Sharing a bank account?	<input type="radio"/>	<input type="radio"/>
Co-owners of a house?	<input type="radio"/>	<input type="radio"/>
Co-owners of a vehicle?	<input type="radio"/>	<input type="radio"/>
Parents?	<input type="radio"/>	<input type="radio"/>

What is your age (e.g., 18)?

How would you describe your gender?

How would you describe your sexual orientation?

- Gay/Lesbian
- Heterosexual
- Bisexual
- Asexual/other (please specify) \_\_\_\_\_

How would you describe your ethnicity?

- Black/African-American
- Asian
- Hispanic/Latino/Latina
- White/Caucasian
- Other (please specify) \_\_\_\_\_

What is your current socio-economic bracket?

- Upper Class
- Upper-Middle Class
- Middle Class
- Lower-Middle Class
- Lower Class

What is your total number of years of formal education (including grade school) in years:

In what US State do you currently live?

Approximately how many romantic relationships have you been in?

Approximately how many sexual partners have you had, with whom you have engaged in sexual behaviors involving genital contact (yours or theirs)?

When using Mechanical Turk to collect data, it is relatively difficult to get data from people in relationships. This link tried to recruit those who are in a romantic relationship. We realize some participants may mistakenly complete this study but not be in a romantic relationship. In the space below please indicate your relationship status. You will still get paid if you were not in a romantic relationship; this is just to ensure our data are as accurate as possible.

- I am currently in a romantic relationship
- I am currently in an ongoing casual sex relationship (e.g., a "boot call" or "friends with benefits")
- I am not currently in any sort of romantic or sexual relationship

Have you been truthful while responding to our survey questions? Again, this will have no bearing on your payment; this is just to ensure our data are as accurate as possible.

- Yes
- No

## Appendix B: Nuanced Methodological and Statistical Details

### Appendix B1: Exploratory factor analysis (Study 2).

EFA is a statistical procedure for analyzing patterns of correlations between observed variables; shared correlations between a set of observed variables may indicate that these variables are manifestations of a shared latent (i.e., unobserved) variable, otherwise referred to as a factor. The extent to which observed variables—in this case, RNSQ items—are strong manifestations of factor(s) is quantified by factor loading values.

Whereas other types of latent variable analyses are used to test or evaluate a pre-specified model of a particular number of factors with a specific pattern of items loading onto those factors (e.g., confirmatory factor analysis), EFA is used when the number of factors and pattern of factor loadings is not known. Though a seemingly straightforward analytic goal, EFA is a very complicated form of analysis; EFA consists of multiple “steps” of data analysis—*extraction*, *rotation*, and *retention*—and each step is beset with exorbitant number of analytic options. Researchers must therefore choose what they feel are among the best of these analytic options for EFA, and there is a robust quantitative literature on best practices for EFA to help them do so (see Conway & Huffcutt, 2003; Fabrigar & Wegener, 2012; Fabrigar, Wegener, MacCallum, & Strahan, 1999; Ford, MacCallum, & Tait, 1986; Henson & Roberts, 2006; Hetzel, 1996, for reviews).

In the *extraction* step of EFA, a loading value is estimated for every item onto every factor. Though there are a number of extraction methods, they can be essentially categorized into one of two approaches: the principle components approach, and the common factor approach (see Fabrigar & Wegener, 2012, for a review). Though principle components analysis is by far the most common extraction method used by psychologists (Fabrigar et al., 1999), and is the default option for extraction in my statistical analysis software packages, it has a number of

limitations that make it undesirable. Namely, principle components analysis makes the dubious assumption that all variables are measured without error, drastically overestimates factor-loading values (Snook & Gorsuch, 1989), and underestimates correlations between factors (Widaman, 1993; 2007).

Common factor approaches, by comparison, ensure that factors are free of measurement error by only analyzing variance that is shared between items, and more accurately estimate factor loadings and correlations between factors. Notably, every cumulative review of best practices in factor analysis that I have cited herein (Conway & Huffcutt, 2003; Fabrigar & Wegener, 2012; Fabrigar et al., 1999; Ford et al., 1986; Henson & Roberts, 2006; Hetzel, 1996,) strongly advocates for the use of common factor extraction method when conducting EFA. I therefore selected maximum-likelihood common factor estimator (Lawley, 1940). Maximum-likelihood offers the advantages of providing standard errors for factor loadings and factor correlations (and thereby, the computation of significance tests and confidence intervals), as well as facilitating some advanced methods of factor retention.

When multiple factors are extracted, as I anticipated would be the case in Study 2, they must somehow be oriented in multidimensional space. There are, however, an infinite number of equally well-fitting orientations—a problem referred to as factor *indeterminacy* (Fabrigar & Wegener, 2012)—and researchers must somehow select among these infinite possibilities. Thurstone (1947) advanced selecting factor solutions that achieved *simple structure*—solutions that would be the most interpretable and likely to replicate. As explained by Fabrigar and Wegener (2012), simple structure essentially translates to a factor solution in which: (1) each factor is represented by a subset of the analyzed items; (2) items representing differing factors should not overlap to a great extent; and (3) each item should be influenced by a limited number

of factors. *Rotation* is the computerized process through a simple structure orientation of the extracted factor solution is determined.

Researchers can computationally *rotate* an extracted factor solution in an attempt to achieve simple structure. Algorithms for rotation are numerous, but can be classified as conforming to an orthogonal or oblique method of factor rotation, with each attempting to maximize different properties of the matrix of factor loadings in the pursuit of simple structure. The main conceptual difference between orthogonal and oblique rotation methods is in what they *assume* of the correlations between factors. Orthogonal methods, such as the widely popular Varimax rotation (Fabrigar et al., 1999), assume that factors are uncorrelated, so they simply fail to estimate correlations between factors. Oblique rotation methods are numerous and varied (see Browne, 2001), but all facilitate the estimation of factor correlations.

Crucially, orthogonal rotation methods do not “make” factors uncorrelated, nor do oblique methods “make” factors correlated—the difference is only in what they assume. Further, correlated factors do not *ipso facto* constitute solutions with worse simple structure; oblique rotation actually produces better simple structure when factors are truly correlated, but even when they are not, oblique rotation produces solutions very close to what would have been achieved with an orthogonal method (Fabrigar & Wegener, 2012). I therefore used the Geomin method of oblique factor rotation.

Finally, researchers must decide how many extracted and rotated factors to keep, in the step of factor *retention*, as researchers can extract as many factors as there are items in an EFA. A number of retention criteria have been proposed and used in the EFA literature, some more accurate and rigorous than others. Commonly used retention methods include the Kaiser criterion (Kaiser, 1960; more commonly known as the “Eigenvalue-greater-than-one-rule”) and the scree

test (Cattell, 1966). Both of these methods involve examining the *eigenvalues* of factors—quantitative representations of how much variance in the observed data a given factor explains. With the Kaiser criterion, researchers are advised to keep all factors with eigenvalues greater than one, whereas with the scree test, researchers plot the eigenvalues of all possibly extracted factors, and select the number of factors with eigenvalues that are large and distinct from the “scree” of factors that form a flat line at the base of the plot. These factor retention criteria, however, have been criticized for being arbitrary (Kaiser criterion) and subjective (scree test), and simulation studies have shown that both—especially the Kaiser criterion—are prone to overfactoring (i.e., retaining too many factors; see Fabrigar & Wegener, 2012; Preacher & MacCallum, 2003, for reviews).

Other more rigorous criteria for factor retention include parallel analysis, indexes of model fit, and nested-model comparisons. Parallel analysis (Horn, 1965), like the scree test, begins with the plotting of eigenvalues for the entire range of possible factors. A set—or sets, as is more common now—of random data, with the same number of observations and range of observed item values, is then simulated, and the factor eigenvalues from the random data are then plotted on the same scree plot. Researchers are encouraged to retain as many factors with eigenvalues that are larger than the eigenvalues from their randomly simulated counterparts. In other words, researchers should retain as many factors that explain more variance in observed data than garbage factors comprised of random noise. Simulation studies have shown that parallel analysis is a very effective method for determining the maximum number of factors that should reasonably be considered (Fabrigar & Wegener, 2012).

Finally, when maximum-likelihood extraction is used—as in the case of Study 2—a chi-square statistic is computed that can be used to test the null hypothesis that the model is a perfect

fit to the data. Researchers are often encouraged to largely ignore the result of this test, because many feel that the null of perfect fit is unreasonably strict, and it is a test that is notoriously sensitive to sample size fluctuations (Brown, 2006; Little, 2013). Even so, it can be easily adapted to provide more reliable indexes of model fit, and can also be used effectively to compare the relative fit between two competing models with different numbers of extracted factors. I therefore also considered whether a given model was a good fit to the observed data, according to two indexes of model fit: the root mean square error of approximation (RMSEA), and the Confirmatory Fit Index (CFI); good fit is indicated by values of lower than .08 for the former, and greater than .90 for the latter (Hu & Bentler, 1999). I also conducted nested-model comparisons to see whether additional factors resulting in a significantly better fitting model.

To summarize, I carried out EFA using maximum-likelihood extraction, Geomin (i.e., oblique) rotation, and made factor retention criteria according to parallel analysis, two indexes of model fit (RMSEA and TLI), and nested-model comparisons. Finally, beyond quantitative metrics, I also evaluated whether competing factor solutions rendered conceptually distinct and/or meaningful factors.

**Appendix B2: Exploratory structural equation modeling (Studies 2, 4, and 5).**

ESEM is an analysis that inhabits a middle ground between exploratory and confirmatory factor analysis (CFA) models (and thus, traditional structural equation modeling), thereby capitalizing on strengths and avoiding limitations of both approaches. For example, researchers using EFA are often interested in somehow using the factors they unearth in subsequent statistical analyses; they must therefore somehow create factor scores as new variables. There are a number of available methods for creating such factor scores (see Grice, 2001, for a review). However, all methods of creating factor scores suffer from the conceptual limitation of rotational indeterminacy; there are an infinite number of alternative and equally legitimate values factor scores could take on, so it is unclear at times why one set of factor score values would be preferable compared to another.

When using CFA, alternatively, researchers are encouraged to specify loading values of zero for items with ostensibly trivial relations to particular factors; a measurement model in which an item is specified to load onto only one factor is preferable, in terms of pursuing parsimonious representation of data. This deliberate model misspecification strategy, however seemingly unimportant, results in upwardly biased factor associations, thereby leading to inaccurate inferences about the structural relations between latent variables (Asparouhov & Muthén, 2009).

ESEM, as recently proposed by Asparouhov and Muthén (2009), addresses the limitations of EFA and CFA. Essentially, ESEM facilitates the simultaneous analysis of latent (i.e., error-free) exploratory factors and latent confirmatory factors. In this way, researchers can avoid issues of factor indeterminacy because observed exploratory factor scores are never calculated, while also preventing model misspecifications when a well-established measurement model is not yet known for a set of exploratory latent variables. However, if and when



researchers are analyzing latent variables for which a strong measurement model already exists, they can specify this model with a traditional confirmatory approach, and the structural relations between exploratory and confirmatory latent variables can be explored.

In Study 2, I therefore specified two groups of ESEMs, using Mplus version 7 (Muthén & Muthén, 2012), in which the four RNSQ factors were estimated with an exploratory model (i.e., essentially replicating the EFA done in the first phase of data analysis), while estimating the 6 PRQC factors—for which a strong measurement model is already established (Fletcher et al., 2000)—with a confirmatory model. Given the strong correlations between the PRQC variables, and as suggested by Fletcher and colleagues (2000), a higher-order confirmatory *relationship quality* factor was specified, on which loaded the lower-order PRQC factors (i.e., *satisfaction, commitment, intimacy, trust, passion, and love*). The ESEM parameters were estimated using maximum-likelihood, and the factor loadings for the exploratory model were rotated again using the oblique Geomin method.

ESEMs were evaluated using the following indexes of model fit: the Confirmatory Fit Index (CFI), root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). Conventionally, CFI values above .90 indicate good model fit, whereas RMSEA and SRMR values below .08 indicate good fit (Hu & Bentler, 1999). An exploratory model, however, introduces a considerable lack of model parsimony, as each item is estimated as an indicator of each factor. As each of these indexes of model fit penalizes models for lacking parsimony, and simulation work has yet to examine what values constitute good fit in the context of deliberately un-parsimonious ESEMs, I therefore adopted somewhat more liberal cutoff values to indicate well-fitting models—above .85 for CFI, and below .10 for RMSEA and SRMR.

The first group of ESEMs tested the primary hypotheses of Study 2, pertaining to relationship type differences in relationship norm strength, and the association between relationship norm strength and quality. To accomplish this, I first created three contrast code variables to partition the between-group variance of the four different relationship types (Cohen, Cohen, West, & Aiken, 2003). The first contrast variable, labeled “ONS”, enabled comparisons of those in recent one-night stands (coded as .75) to those in one of the other three ongoing relationship types (coded as -.25). The second contrast variable, labeled “Casual”, enabled comparisons of those in ongoing casual sex relationships (coded as .66) to those in one of the two exclusive relationship types (coded as -.33). The final contrast variable, labeled “New”, enabled comparisons of those in a new exclusive romantic relationship (coded as .50) to those in established exclusive romantic relationships (coded as -.50).

An indirect effects model, in which relationship type contrast variables predicted RNSQ exploratory factors, which in turn predicted the confirmatory second-order relationship quality, was first examined. Given the correlational nature of these data, however, a second model in which relationship type contrast variables were indirectly associated with RNSQ factors through relationship quality was also evaluated.

The indirect effects for both models were tested using the Monte Carlo Method for Assessing Mediation (MCMAM; Preacher & Selig, 2012). The MCMAM is a method of testing indirect effects, in which a distribution for the indirect effect (typically referred to as the *ab* path) is simulated, based on the unstandardized estimates and associated standard errors of the associations between predictors and mediators (e.g., the relationship contrasts and RNSQ variables; typically referred to as the *a* path), and the unstandardized estimates and associated standard errors of the associations between mediators and the outcome of interest (e.g., the

RNSQ variables and relationship quality typically referred to as the  $b$  path). A superficially large number of random samples are then drawn for the simulated distribution of the  $ab$  path, and a 95% confidence interval can then be created around the sampled values of  $ab$ ; a significant indirect effect is indicated when the value of zero is absent from the confidence interval of  $ab$ . The indirect effect  $ab$  is numerically equivalent to the difference in associative strength between a model in which an outcome (i.e., relationship quality) is regressed onto a predictor (e.g., a relationship type contrast), when the effect of the hypothesized mediator(s) on the outcome is (are) not controlled for (referred to as the  $c$  path), and a model in which the effects of the hypothesized mediator(s) on the outcome is (are) controlled for (referred to as the  $c'$  path).

Though bootstrapping estimates of indirect effects is typically the gold standard of assessing mediation (see Preacher & Hayes, 2004, 2008, for a review), it is not possible in Mplus with exploratory factors. Simulation research, however, has demonstrated that when bootstrapping indirect effect estimates is not possible, the MCMAM is the preference method of testing mediation, as it requires fewer unrealistic assumptions about the  $a$  and  $b$  paths—though still makes assumptions about the distribution of  $ab$ —compared to other methods (e.g., Sobel test; Preacher & Selig, 2012).

A final ESEM tested the correlations between exploratory the RNSQ factors and the items related to perceived similarity and asset/responsibility sharing between partners. As these hypotheses did not pertain to relationship quality, the confirmatory measurement model of the PRQC was omitted from this ESEM.

### Appendix B3: Example responses to RNS primes (Study 5).

#### *Example responses from strong norms priming condition.*

We are interested to know more about the current relationship that you are in. We are especially interested in learning about the ‘rules’ and expectations you and your partner may have for one another in your relationship. For example, some couples might have ‘rules’ and expectations about parts of their sexual relationship, finances, family roles, or other topics. **Please think about a time in your current relationship when you and your partner explicitly discussed or negotiated some of the ‘rules’ and expectations of your relationship, agreed upon them, understood them, and recognized that there would be serious consequences for breaking them.** What were you thinking about and feeling during this moment in your relationship?

Please describe as much about this memory as you can, in the space below—we are especially interested in learning about what your thoughts and feelings were at the time.

*My boyfriend and I had been having some disagreements so instead of just getting mad, we found a quiet place to talk for a while to help set some rules and understand each others' intentions a little better. Many of the "rules" discussed focused on being friends with the opposite sex including staying platonic with people who had 'crushes' on us. We had already established that the relationship was exclusive but this was something that needed to be discussed anyway. At first, the conversation was uncomfortable because we both had different thoughts and experiences we needed to talk about and it was difficult to hear the opposing side's point of view compared to our own but the conversation eventually reached a place where compromise was realized and we were both able to walk away from the discussion pleased with what we had accomplished. I felt relieved when it was over and happier with the state of our relationship in terms of the "rules" that had been laid out at that time.*

*One night we sat outside under the stars and just had a random conversation about our relationship. We agreed that we would like everything to be equal and shared. That not one person would put more into the relationship than the other. We talked about future goals and career plans and how they would work out together for us. We also talked about moving in together and how that would work out. I felt happy and excited to be with this person. We saw eye to eye on almost all the things we discussed. I was confident that I had found the one for me.*

*We discussed the breakup of financial responsibilities - who was responsible for what. I would handle major financial decisions, such as investments, insurance, etc and she would handle paying bills, weekly grocery spending, clothing for the most part, etc. If not, there could be chaos and confusion and negative results. So we had to keep things on track. We both agreed and came to a mutual agreement in the matter.*

*I recently had a discussion with my partner regarding how we would value each other respective personal and career interests, but still devote time to maintaining our relationship and supporting each other. It was a rather calm somewhat uncomfortable conversation, as I felt we were both at a major turning point in our relationship.*

*Specifically, we discussed what expectations we each had about this issue, in terms of how time we would work to allocate each week to our relationship. We also talked how we would take the time to support each other in tangible ways as each of us pursue our career goals. This included attending work-related social events together or taking turns with household chores. Another key expectation was that we would work to maintain open, honest communication with one another. As we talked remembered and understood that if we absolutely had to address and fulfill the expectations under discussion. Otherwise, the consequences would be that we would grow increasingly resentful of one another and each of our respective career and personal lives would suffer greatly, eventually causing our relationship to end. After this discussion, I felt a big sense of relief, as I felt we had clearly defined what we needed to do to in order for our relations to be successful.*

*My wife and I for years and years have been polyamorous. We set down the rules for our polyamory. We are both allowed to have multiple sexual partners, but we must tell each other who we are sleeping with and we are clear primary partners for each other. If either of us lie to the other about this we will have severe consequences including but not limited to divorce.*

*We have established a mutual rule. If I don't have to go shopping with her, she does not have to come with me to the ball games. We pretty much agreed to the rule immediately as we don't really want to do the other's favorite activity. If we want to break the rule, we would have to pay a fine of \$1,000. Since we are both really frugal, that means a lot. When we established the rule, I felt a great level of trust between the two of us. I felt that we have moved our relationship to another level.*

*One of the negotiations that my husband and I have had and come to an agreement on is about me buying soda for him to drink. The rules we made about it were that he could have one a day and would have to brush his teeth at night after drinking one. This might sound silly or petty, but he isn't very healthy and it was a way for me to get him to engage in more healthful behaviors, like reducing the amount of soda he drinks and keeping his teeth cleaner. I was feeling frustrated when we were doing this, because I don't like spending money on things like soda.*

*We discussed how to raise our kids, what was acceptable in terms of discipline/teaching them right from wrong, etc. We agreed that yelling and spanking are not acceptable.*

### ***Example responses from weak norms priming condition.***

We are interested to know more about the current relationship that you are in. We are especially interested in learning about the 'rules' and expectations you and your partner may have for one another in your relationship. For example, some couples might have 'rules' and expectations about parts of their sexual relationship, finances, family roles, or other topics. **Please think about a time in your current relationship when you felt as though you weren't sure what the 'rules' and expectations of your relationship were. You may have also felt unsure of whether you and your partner agreed on what 'rules' and expectations should be in place,**

**or what the consequences of breaking these ‘rules’ and expectations might be.** What were you thinking about and feeling during this moment of uncertainty in your relationship?

Please describe as much about this memory as you can, in the space below—we are especially interested in learning about what your thoughts and feelings were at the time.

*A while back, I spoke to my ex. I wasn't 100% clear at the time on how my SO [significant other] felt about talking with exes. We had both been cheated on by our exes and she mentioned briefly that she thought it led to cheating. I was stupid at the time and spoke with my ex anyway. I felt guilty about it.*

*Usually regarding his son. I'm not sure exactly where my place is, and when it's okay to step in and say something or if I should just remain quiet. When the situation affects me too, it seems like I should be able to offer my input, but I'm never entirely sure when it's okay and when it isn't. I wouldn't want to overstep my bounds.*

*Not necessarily early in our relationship, but early in us being in a serious relationship, she would get upset at me for not calling her enough. So while she never directly told me to, I started calling her every other day and this caused her to be a lot more happy with me. The consequence in this case was merely her being upset*

*During the early parts of my relationship, I wasn't at all sure about finances. We had moved in together, but we were still using our money completely separately - if we went out, one of us would pay one time, the other would pay the next, we were buying groceries separately, splitting up bill paying, etc. I felt like if we had made the commitment to move in together, we should also be more conscientious of how we were splitting our money. I wanted to have my own money to do with what I wanted, and I wanted him to have that, too, but I felt that we should have a "pool" of money that we used for joint things like eating out, groceries, bills, etc. I didn't know how to bring it up without sounding like I wanted the relationship to be more serious than he did, and it caused a lot of tension because I was upset without feeling like I could verbalize it.*

*After we had been dating for some time I was still unclear about the limits of our sexual relationship and what activities would be considered off limits. For example, i was concerned that if I approached my partner about performing certain acts, she would think I was perverted or weird. This made me feel uncertain and a bit anxious about how to move forward with this aspect of our relationship*

*Awhile ago my significant other had left to a friends house and said they would be home at a certain time. I thought that it was only respectful to come home at the time that we say we would and was very surprised when my boyfriend didn't come home till five hours later. I was very confused on what the rules were and didn't know what to expect out of the relationship.*

*One time I can remember was wondering what kinds of religious roles we might need to take part in. He was raised Catholic and even went to a Catholic school and i have never*

*been religious. I am always worried that that may affect us and that he might expect me to become more religious in the future.*

*Lately there is uncertainty about holidays and birthdays and expectations for gift giving. We want to show our love but we are budgeting and sometimes we don't know if the other person expects a big gift or if they are okay with something small and then to talk about it is awkward and ruins the spontaneity of picking out the gift. I was feeling uncertain during these moments -- if I should just ask my husband how much I should spend or what he wants or just decide for myself.*

*I moved 10 hours away to live with my boyfriend. His family lives very close and mine is very far so naturally we see his family a lot. At first I was unsure as to whether I should go with him everytime he goes back home to visit his family. If I don't go with him will his family think something is wrong or I don't like them? If I do go with him everytime will I prevent him from spending quality time with his parents?*

*We were not sure what was expect of each other when it came to the frequency of when we'd be able to go on dates and see each other. For the most part, our schedules were incompatible and there was little free time we both had. We needed to have a discussion about how we felt about not seeing each other often, which was hard for me to have and made me feel anxious the whole time. I was thinking that I was more willing to make sacrifices than he was.*