



The role of rapport in satisfying one's basic psychological needs

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Abstract

Psychological need satisfaction is essential for daily human functioning and one of its sources is high quality interactions. Rapport is essential to high quality interactions and may be one way that various relationships types can provide the nutrients of healthy functioning. We hypothesized that when people perceive interactions to be higher in rapport, they will experience greater satisfaction of their needs for autonomy, competence, and relatedness. We also explored whether this would be a basic process that would be altered by the relationship between interactants, testing this with multiple operationalizations. We conducted an event-contingent diary study in which participants ($n_{\text{participants}} = 124$) responded to items at baseline, each time they experienced an interaction ($n_{\text{interaction}} = 1293$), and at two-week follow-up. Supporting hypotheses, rapport in interactions was positively associated with need satisfaction within-persons, between-persons, cross-sectionally, and when examining temporal change. Moreover, rapport tended to predict the satisfaction of one's needs for competence, autonomy, and relatedness independently. Finally, relationships between interactants did not moderate these associations.

Keywords Rapport · Self-determination · Need satisfaction · Interaction

Given that interactions with others are so prevalent and pervasive, they have the ability to significantly affect people's lives both day-to-day and more globally. These interactions are inherently difficult to study because they can occur with variable frequency and in different types of relationships, from the most intimate (e.g., a romantic partner), to the most superficial (e.g., a transaction with a cashier). The relationships we form with close others are fundamental to physiology, affect, health behaviors, and a variety of health outcomes (e.g., Kiecolt-Glaser et al. 2005; Pietromonaco et al. 2013). Likewise, less close others can provide benefits that complement (Baker et al., revise and resubmit) or even exceed (Chopik 2017) those of our closest relationships. The present research builds on these findings by examining how all of one's interactions, as opposed to only those with close relationship partners, may impact individuals. Specifically, this research examined how rapport (i.e., positive affect,

mutual attention, and coordination) in the context of one's daily social interactions predicts the fulfillment of one's basic needs for autonomy, competence, and relatedness.

Basic psychological needs

Self-Determination Theory (SDT) postulates three basic psychological needs: autonomy, competence, and relatedness, which underlie growth, motivation, performance, and well-being (Deci and Ryan 2000). Work both within and outside of SDT has provided support for a need for relatedness in which individuals feel close and connected to others (e.g., Baumeister and Leary 1995). Competence has received similar support (e.g., Elliot and Dweck 2005) and is satisfied when people pursue and master tasks that are optimally challenging—neither too difficult nor too easy. Finally, a great deal of research has supported autonomy's significance within and outside of the SDT tradition (e.g., Reis et al. 2000; Rogers 1963). Autonomy refers to the desire that behavior be self-directed, and that people possess agency in choosing their own actions. There are many ways in which need satisfaction may be fostered in interactions. In the context of interactions, relatedness might be satisfied when interactants express, explicitly or implicitly, that

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they care for one another. Competence satisfaction should be experienced when interactants feel that they are interacting effectively rather than having an awkward or stumbling conversation. Autonomy will be satisfied when interactants feel comfortable voicing their thoughts or opinions.

Notably, the need for autonomy can still be satisfied when acting in accord with another's wishes. The nature of another's wishes is not as pertinent as is the motivation for the action. If people behave in a certain way only to satisfy the demands of another, this would not support autonomy. However, if people act in accord with another's wishes and do so because they find the action inherently rewarding, or because it is consistent with their sense of self, this would satisfy autonomy (Deci and Ryan 2000). This nuance accounts for why autonomy and relatedness are quite compatible and typically are positively related (Hodgins et al. 1996).

A great deal of evidence suggests that basic psychological need satisfaction, as defined by SDT, is fundamental to human functioning through its impact on well- and ill-being (e.g., Deci and Ryan 1985, 2000). For example, satisfaction of one's needs positively predicts life satisfaction, vitality, positive affect, positive self-concept, coder-rated and self-reported adjustment, self-esteem, self-acceptance, purpose in life, personal growth, relationship quality, happiness, and mental health (Baard et al. 2004; Chen et al. 2015; Heppner et al. 2008; Milyavskaya et al. 2009; Philippe et al. 2011; Sheldon and Niemiec 2006). Likewise, lower need satisfaction is related to more depressive symptoms, negative affect, oppositional-defiance, impulsivity, anxiety, somatic symptoms, social dysfunction, and stress (Baard et al. 2004; Chen et al. 2015; Heppner et al. 2008; Milyavskaya et al. 2009; Philippe et al. 2011; Sheldon and Niemiec 2006). Finally, in the relational domain, need satisfaction predicts greater commitment and less likelihood of breakup (Slotter and Finkel 2009), more attachment security (La Guardia et al. 2000), and better relationship quality even following disagreements (Patrick et al. 2007).

Given the compelling evidence that satisfaction of one's needs for autonomy, competence, and relatedness are fundamental to well-being and ill-being as well as behavioral, relational, and personal outcomes, need satisfaction as an outcome in-and-of itself deserves more attention (Hadden et al. 2016). Examining need satisfaction, as opposed to individual outcomes, also reduces participant burden and increases parsimony with a reasonable expectation that increased need satisfaction will benefit individuals in many ways.

Numerous studies have demonstrated the benefits of satisfying one's needs in a variety of domains (e.g., Milyavskaya et al. 2009), but one of the most impactful domains is one's close relationships (Knee et al. 2013; Ryan and Deci 2017a, b). Close relationships are so important that in its most recent revision a comprehensive mini-theory of them

was added to SDT (Ryan and Deci 2017a, b). Still, there are a great number of interactions with others who we do not consider especially close. People also establish more relationships with these less close others because these relationships are less burdensome to establish and maintain (Hall 2018). How then might these less close interactions relate to individuals' need satisfaction? One avenue by which interactions might impact need satisfaction is through the experience of rapport with those we encounter. To our knowledge, the link between rapport and need satisfaction has not been carefully examined.

Rapport

Colloquially, rapport is the emotional experience of high-quality interactions. While the emotional experience of a high-quality interaction may often be associated with objective measures of high quality interactions, this will not always be the case. For instance, the content of an interaction may be irrelevant (e.g., when talking to one's romantic partner about nothing at all), the connection may be fleeting (e.g., when interacting with a barista at a coffee shop), and emotional support need be neither given nor received (e.g., when having an important meeting at work). Even in these scenarios, people might have the emotional experience that an interaction feels high-quality (i.e., is high in rapport). The present research operationalizes rapport as laid out by Tickle-Degnen and Rosenthal (1990) because of its rigorous theoretical and empirical support in the literature. Unfortunately, this rigor has not been consistently applied in the study of rapport and the literature presents many different, perhaps idiosyncratic, operationalizations and measurement strategies. Like need fulfillment, rapport has three primary components: positive affect, mutual attention, and coordination between interactants (coordination may also be referred to as synchrony e.g., Bernieri et al. 1994). Notably, though, fundamental to rapport is its dyadic context, which when not present, markedly changes experiences of rapport (Puccinelli et al. 2003). Thus, perceived rapport should be studied not only in terms of one individual's positive affect, mutual attention, and coordination, but instead in terms of that individual's perception of both interactants' experiences of these elements.¹ Very similar components are proposed to make up perceived positivity resonance (i.e., shared positive emotion, mutual care, and biobehavioral synchrony; Fredrickson 2016), which is theoretically considered to be the event-specific, emotional experience of love. While we do not go as far as to say that rapport is, itself, the emotional

¹ Ideally, there might be reports from both interactants. This is an issue we return to in the discussion.

experience of love, perceived positivity resonance and rapport “differ primarily in degree, rather in kind, and that it may be more generative to consider them as examples of the same underlying biopsychosocial phenomenon.” (Fredrickson 2016, p. 851).

Perceived positivity resonance was recently found to be related to more positive emotions and flourishing mental health while being related to fewer depressive and illness symptoms and less loneliness. Similarly, rapport is positively related to self-disclosure, cooperation, liking, affiliative goals, and affiliation (Lakin and Chartrand 2003; Vacharkulksemsuk and Fredrickson 2012; Wiltermuth and Heath 2009). Rapport’s benefits do not seem to be confined to any specific type of relationship as it has benefits in hierarchical relationships (e.g., between faculty and students; Grantiz et al. 2008), zero-acquaintance interactions (Markey et al. 2003), and established relationships (Bernieri et al. 1994). More recently, rapport has even been demonstrated in interactions between humans and virtual agents (Huang et al. 2011).

Research directly examining how self-determination is related to rapport has found that when one member of an interaction is more autonomy-supportive, the other member tends to perceive more rapport in the interaction (Gurland and Grolnick 2003, 2008; Gurland et al. 2012). Indirect study of self-determination as it relates to constructs similar to rapport has demonstrated that being primed with autonomy (relative to control or neutral primes) is associated with greater interaction quality (Weinstein et al. 2010). Likewise, one recent study found that observed reciprocity in interactions (likely a construct central to rapport and particularly reminiscent of the coordination component) was positively related to self-reported need satisfaction among both interactants (Wuyts et al. 2018). We believe our work has the ability to build upon that of Gurland, Weinstein, Wuyts, and colleagues in several ways. For instance, in Gurland et al.’s studies children rated rapport after watching a video of an adult acting in an autonomy-supportive or controlling manner (i.e., there was no actual interaction), rapport was validated based upon graduate student opinions of how “rapport related” (Gurland and Grolnick 2003, p. 1216) items were rather than having theoretical origins, need satisfaction was not measured, and the measure of rapport largely assessed perceptions of how one member of the interaction felt (i.e., the other “She would laugh if I told a joke, She seemed to like children, and She didn’t want to get to know me better”; p. 1216) rather than taking the dyadic perspective that seems to meaningfully alter perceptions of rapport (Puccinelli et al. 2003). Similarly, Weinstein et al. (2010) used various conceptualizations of closeness and mood to assess something akin to rapport, did not assess need satisfaction, and did consider the dyadic perspective, though only to create discrepancy scores from people’s own feelings. Wuyts

et al. (2018) studied both real interactions and used multiple methods for their measurements (i.e., self-report and observer-coded behavior) but were unable to assess all three psychological needs (i.e., no measure of competence) and measured a construct similar to one component of rapport rather than rapport itself. Thus, we believe the major contributions of our own work over-and-above the pioneering work of Gurland, Weinstein, Wuyts, and colleagues will be to study rapport as it relates to need satisfaction in a more rigorously conceptualized and operationalized way while examining the outcomes of rapport that may be essential to need satisfaction according to self-determination theory.

While the present research defined rapport using Tickle-Degnen and Rosenthal’s (1990) conceptual model, it also drew from other approaches to rapport. For instance, although Grantiz et al. (2008) investigated rapport qualitatively, without operationally defining it, their study offers a unique lens into what individuals view to be the causes and consequences of rapport. In their study, university faculty described the antecedents and outcomes of rapport with their students (Grantiz et al. 2008). Grantiz et al. (2008) did not examine these outcomes as they relate to autonomy, competence, and relatedness, but we believe many of the outcomes identified are descriptive of those three needs.

Rapport and need satisfaction in different types of relationships

Relationships are beneficial for people in a variety of ways including the promotion of health (Allen et al. 1991; Cohen 2004; Uchino 2009), well-being (Feeney and Collins 2015; Gable and Reis 2010), and even reduction of mortality risk (Holt-Lunstad et al. 2010; Luo et al. 2012). One instrumental source of these benefits may be the satisfaction of needs for autonomy, competence, and relatedness (Kasser and Ryan 1999; Knee et al. 2013; Ryan and Deci 2017a, b; Uysal et al. 2010). While closer relationships might provide more benefits than less close relationships (Holt-Lunstad et al. 2010), the number of close relationships is often limited (Fingerman 2009) and less close relationships can provide unique benefits (Baker et al., revise and resubmit; Chopik 2017). Moreover, the amount of time required to develop close relationships can be immense. Hall (2018) estimated that turning a friendship into a good or best friendship requires an investment of 120–200+ hours over 3–6 weeks. This level of effort is equivalent to taking on a full-time job! Meanwhile, in that same amount of time, people might form nine new casual friendships (Hall 2018). We do not suggest that people should pursue only casual relationships at the expense of close relationships, or close relationships at the expense of casual relationships. Instead, we point out the surprisingly large investment required to increase closeness. This

investment underlies the importance of basic strategies for understanding how people reap benefits from relationships regardless of their level of closeness. Reaping these benefits might occur through need satisfaction that results from experiencing rapport in interactions with others.

Rapport might be expected to be related to need satisfaction in a sort of halo of positivity, but rapport's component parts may suggest other reasons for their likely association. For instance, when interactants share mutual attention, the engagement experienced by both conveys a sense of competence that each is an effective interactant. Likewise, the synchrony of an interaction high in rapport has been shown to causally increase feelings of affiliation, a construct very similar to relatedness (Hove and Risen 2009). Finally, if a sense of coordination is felt between interactants when people are simply acting as they naturally would, this will lead to increased feelings of autonomy satisfaction because people do not feel pressured to change to improve the interaction. While our examples draw parallels between individual components of rapport and individual needs, we do not suggest that these are the only ways these constructs might be associated. For instance, a sense of coordination would be likely to satisfy competence and relatedness in the same way mutual attention and synchrony are suggested to satisfy them.

Rapport and need satisfaction as a fundamental association

As reviewed above, rapport can be experienced in a wide variety of relationships. Still, it is worth considering whether rapport provides need satisfaction in the same way across these different types of relationships. Recent research suggests that there are mean level differences in amounts of need satisfaction provided by close and non-close relationships, with non-close relationships providing considerably less need satisfaction (e.g., Baker et al., revise and resubmit). Still, the same research also found that the processes by which this need satisfaction is experienced did not seem to change markedly across different types of relationships. With both close and less close others, need satisfaction predicts greater well-being and goal progress. Interestingly, these associations emerged uniquely. That is, while less overall need satisfaction was reported with non-close others, the need satisfaction that was experienced in each type of relationship mattered uniquely for important outcomes (Baker et al., revise and resubmit).

Another line of research examining need satisfaction in different types of relationships, suggested that need satisfaction's association with attachment security was uniquely and consistently related in at least six different kinds of close relationships (La Guardia et al. 2000). Taken together, these

results suggest that while absolute levels of need satisfaction may vary from one relationship type to another, the predictors and outcomes of need satisfaction may be constant. A similar set of associations between rapport and need satisfaction across different kinds of relationships, might suggest a universal process by which interactions benefit people.

The present study

The present research was conducted with the expectation that high-quality interactions, that is, those characterized by high levels of rapport, would lead to greater feelings of one's basic psychological needs being satisfied. Given that need satisfaction has the greatest benefits when all three needs are satisfied, rapport should be most impactful when it leads to satisfaction of each need independently (Deci and Ryan 2000). The present study examined the relationship between rapport and need satisfaction in one's interactions across a two-week span, without being confined to specific domains or relationships. Additionally, this study explored the role of chronic rapport (i.e., across 2 weeks of one's interactions) in relation to satisfaction of global need satisfaction, as well as the role of momentary rapport (i.e., experienced in a single interaction) in relation to need satisfaction in that same interaction. Rapport is commonly studied in the context of interactions, but a more global indicator of it (i.e., across many of one's interactions) captures between-person processes. These between-person processes complement the within-person examination provided by the analysis of interaction-level associations.

In addition to testing hypotheses at multiple levels of analysis (i.e., within- and between-persons), we examined whether these effects remain when controlling for outcome need satisfaction in people's most recent prior interaction (i.e., assessing rapport as a predictor of changes in need satisfaction). We also controlled for satisfaction of people's other needs in our models (e.g., controlling for competence and relatedness when examining rapport as a predictor of autonomy). Relatedness seems to be the need that is most logically related to rapport due to its inherent interpersonal focus, but the constructs are theoretically distinct with rapport being represented by positive affect, mutual attention and coordination while relatedness is represented by a need to belong and provide/receive care to/from others. Therefore, it is important to partial out the effects of relatedness when examining the associations between autonomy and rapport as well as competence and rapport. Because these needs have consistently been found to be strongly positively related in past research (e.g., Patrick et al. 2007), we explored how rapport uniquely predicts each basic psychological need when controlling for satisfaction of one's other needs (e.g., when assessing the rapport-relatedness association, we controlled

for autonomy and competence). This also allowed us to examine the effects of rapport beyond mere relationship quality. Finally, we employed a continuous measurement of relationship intimacy as well as rater-coded relationship types to explore how qualitatively and quantitatively different types of relationships with others might moderate the associations between rapport and need satisfaction.

While we conceptualized intimacy and relationship type as a way of testing whether the proposed associations are indicative of something unique to certain relationships or a more fundamental process, controlling for these variables also helped to rule out alternative explanations for our results. For example, some might expect that rapport is simply a proxy for closeness, which often overlaps so much with intimacy that they are thought of as one construct (e.g., Berscheid et al. 2004). Therefore, controlling for intimacy also allows us to examine whether rapport is something more, as we propose above.²

We specified the following hypothesis for the association between rapport and need satisfaction and explored whether intimacy or relationship type might moderate this effect:

Hypothesis 1 Rapport will positively predict autonomy, competence, and relatedness. We expect this to be true at the between-person level, the within-person level, when controlling for each other need, when examining change in need satisfaction from the previous interaction, and when examining both global and interaction-level need satisfaction.

Exploratory Aim 1 Examine whether intimacy and relationship type of interactants moderates the basic associations between rapport and need satisfaction.

Method

Participants

One hundred forty (37 male, 103 female) students from undergraduate psychology courses at a large southwestern university were awarded extra credit for participating. Of these, 124 (89%) completed diary entries and were included in the present analyses. Additionally, 98 participants (78%) completed follow-up surveys. Those who dropped out of the study prior to completing all portions did not differ in terms of gender or baseline autonomy, competence, or relatedness need satisfaction. On average, participants completed 10.43 ($SD = 7.03$; $Range = 1-42$) interaction diary entries that

lasted an average of 86.73 min ($SD = 98.72$). The sample was ethnically diverse: 20% Caucasian, 15% African-American, 24% Asian, 4% Middle Eastern, 31% Hispanic/Latino, 5% other, and somewhat older than a typical undergraduate sample ($M = 23.36$, $SD = 7.02$). Our sample size was determined by the greatest number of participants we could collect in a single semester. Post-hoc power analyses using G*Power revealed that our least powerful analyses (i.e., those assessing temporal relationships at the between-person level) had a power of .87 to find effects of moderate magnitude (Cohen 1992; Faul et al. 2009).

Procedure

Completion of the study involved four phases: a baseline questionnaire, interaction diaries following every instance of an interaction, daily records, and a follow-up survey upon completion of the study. The daily responses are not pertinent to the current investigation and are not discussed further. Instead, the current investigation focuses on the baseline, interaction diaries, and follow-up records. Data from this study were reported in Baker et al. (2017). None of the variables or associations reported in that work are included in the present analyses.

Participants first attended group orientation sessions where the procedures for completing the diary records were explained. During orientations, participants were told that each time they interacted with another individual or individuals for a time greater than 20 min, they were to complete an interaction survey. Making use of Reis and Wheeler's (1991) Rochester Interaction Record method, interactions were defined as consisting of two essential components: "following the conversation" and "being able to enter it if one wished to." During these sessions, participants also signed up for daily e-mail, and text message reminders to complete the surveys. At the session's conclusion, any questions about procedures that remained unclear were answered for participants. Participants then completed a baseline survey and, on the first Sunday following their orientation, began recording online diary records for 14 consecutive days. After the diary period, participants were emailed the follow-up survey.

We chose to assess rapport and need satisfaction at the event-level because it removes a great deal of memory bias that would exist with other methods of assessment. Moreover, diaries allow us to sample a range of interactions rather than a single interaction, as is the norm in rapport research (e.g., Duffy and Chartrand 2015). Finally, having several time points from which to examine our hypotheses allowed for replication within the study across different levels of analysis (i.e., between- and within-persons).

² Controlling for both satisfaction and intimacy did not alter the results of our cross-sectional, lagged, or chronic rapport-> follow-up need satisfaction analyses.

Measures

Interaction level measures

*Rapport*³ was assessed with three items designed to match each of the three components that research suggests collectively compose rapport ($\alpha = .84$; Tickle-Degnen and Rosenthal 1990). Participants rated “the extent to which you and the people you interacted with both experienced the following in the interaction you described.” Items including positive affect, mutual attention, and coordination were rated from 1 (*Not at all*) to 7 (*A great deal*).

Social interaction need satisfaction was measured using the 9-item Need Satisfaction in Relationships Scale ($\alpha = .89$; La Guardia et al. 2000). Items were adapted by removing the stem “When I am with my partner,” and by changing to past tense. Three items measured each need for each interaction (e.g., Autonomy: “I felt free to be who I am” [$\alpha = .73$]; Competence: “I felt like a competent person” [$\alpha = .77$]; Relatedness: “I felt cared about” [$\alpha = .78$]) and were rated from 1 (*strongly disagree*) to 7 (*strongly agree*).

Intimacy of the interaction was rated from 1 (*Not Intimate*) to 7 (*Intimate*) similar to methods described by Reis and Wheeler (1991).

Relationship Type was coded by the second author. Prior to any other items at this level, participants were asked to, “Please describe the interaction you just had.” This free-form response was intended to increase salience of the interaction and better prepare participants to answer the questions that followed. The second author read through each of these interactions and coded them with an exhaustive list of relationship types identified. From this list of 32 relationship types, we combined under-represented or conceptually similar relationship types. For example, aunts and uncles, for whom there were relatively few reports, were combined into a single “family” category. This sorting left us with 6 categories including unspecified (19.41%), stranger (2.30%), acquaintance (17.84%), friend (29.81%), family (18.59%), and significant other (12.04%). Stranger was entered as the reference group in the analyses that follow, and we deleted “unspecified” codes for the accompanying analyses as their meaning is conceptually uninterpretable. Because the relationship type indicator was categorical and could not be meaningfully combined for between-person assessments, estimation using this indicator is presented only for within-person results.

³ For psychometric information pertaining to the rapport items within different kinds of relationships and for all measures included in this study including measurement occasions and exact scale and text of those measures please visit https://osf.io/a53vy/?view_only=d4bc3f0200ae4e4eb53393aceeb810cd.

Baseline and follow-up measures

Basic Needs in Life were assessed with the 21-item Basic Need Satisfaction in Life Scale ($\alpha_{\text{baseline}} = .89$, $\alpha_{\text{followup}} = .90$; Gagne 2003). Items measuring autonomy (7 items; e.g., “I feel like I am free to decide for myself how to live my life”; $\alpha_{\text{baseline}} = .76$, $\alpha_{\text{followup}} = .79$), competence (6 items; e.g., “People I know tell me I am good at what I do”; $\alpha_{\text{baseline}} = .71$, $\alpha_{\text{followup}} = .74$), and relatedness (8 items; e.g., “I really like the people I interact with”; $\alpha_{\text{baseline}} = .78$, $\alpha_{\text{followup}} = .81$) were rated for how true participants felt each was for them from 1 (*not at all true*) to 7 (*very true*). While the first scales of need thwarting had been published by this time (e.g., Sheldon and Hilpert 2012), we were unaware of them at the time of data collection and did not include need thwarting in this study. Special attention is paid to need thwarting in the limitations and future directions section of the discussion.

Results⁴

Data used for the present analyses may be found at <https://osf.io/9egsb>.

Interaction responses

To assess the association between perceptions of interaction rapport and interaction need satisfaction, a series of multi-level models were computed. An autoregressive covariance structure was specified to account for the assumption that one’s responses regarding two interactions that are closer in time should be more related than two interactions that are farther apart in time. Additionally, interaction-level predictors were centered at each individual’s mean across interactions. This allowed for a pure estimate of within-person (i.e., interaction-level) effects beyond any between-person (i.e., individual-level) effects. To estimate between-person effects, the means of participants’ responses across all interactions were also entered as predictors and were centered at the grand mean to facilitate interpretation (following

⁴ Several reviewers also expressed concern that the observed associations may be largely driven by positive affect, thus we repeated our analyses with positive affect removed from the rapport composite (please see supplemental tables). While we maintain, in line with theoretical tradition (e.g., Fredrickson 2013, 2016; Major et al. 2018; Tickle-Degnen and Rosenthal 1990), that positive affect is a fundamental component of rapport, positive affect does not solely drive the effects of rapport observed herein. Notably, our estimates are also likely rather conservative given power limitations associated with examining a construct with just two indicators (this seems particularly noteworthy in the between-person analyses wherein there is already far less power to detect true effects).

Table 1 Correlations between interaction rapport and interaction need satisfaction

	1.	2.	3.	4.	5.	Mean	SD
1. Rapport	.28	.73***	.66***	.71***	.33***	5.68	.80
2. Autonomy	.57***	.24	.79***	.65***	.24**	5.72	.83
3. Competence	.53***	.63***	.28	.61***	.16	5.73	.84
4. Relatedness	.63***	.60***	.48***	.18	.62***	5.19	.88
5. Intimacy	.44***	.31***	.24***	.56***	.41	3.95	1.53
Mean	5.73	5.81	5.84	5.29	4.03		
SD	1.27	1.27	1.21	1.42	2.05		

Person-mean centered, interaction-level (Level 1) estimates are displayed below the diagonal. These estimates were calculated by estimating each individual's scores for each interaction. Chronic (Level 2) estimates are displayed above the diagonal (bolded). ICCs (i.e., $\frac{\text{Level 2 Variance}}{\text{Total Variance}}$) are presented along the diagonal

** < .01, *** < 0.001

Table 2 Model evaluating rapport's cross-sectional associations with basic need satisfaction

	Autonomy				Competence				Relatedness			
	<i>b</i>	<i>p</i>	CI	<i>R</i> _{Partial}	<i>b</i>	<i>p</i>	CI	<i>R</i> _{Partial}	<i>b</i>	<i>p</i>	CI	<i>R</i> _{Partial}
Level 1 predictors (within-person)												
Rapport_{Int}	.17	< .001	.12 .22	.18	.23	< .001	.17 .28	.23	.50	< .001	.44 .56	.41
Autonomy _{Int}	—	—	—	—	.43	< .001	.38 .48	.42	.40	< .001	.33 .47	.32
Competence _{Int}	.41	< .001	.36 .46	.42	—	—	—	—	.07	.055	— .002	.14 .06
Relatedness _{Int}	.26	< .001	.21 .30	.32	.04	.070	— .003	.09 .05	—	—	—	—
Level 2 predictors (between-person)												
Rapport_{Chronic}	.27	< .001	.13 .42	.10	.21	.015	.04 .38	.07	.56	< .001	.40 .73	.19
Autonomy _{Chronic}	—	—	—	—	.65	< .001	.49 .80	.23	.27	.011	.06 .47	.07
Competence _{Chronic}	.52	< .001	.39 .64	.23	—	—	—	—	— .04	.691	— .22	.15 — .01
Relatedness _{Chronic}	.17	.013	.04 .30	.07	— .02	.787	— .17	.13 — .01	—	—	—	—

Hypothesized estimates of interest are highlighted in bold

bs represent unstandardized effect estimates

precedent, these means will be referred to as *chronic* indicators of each variable; Baker et al. 2017; Crocker and Cannell 2008). Means, standard deviations, and correlations between chronic and interaction-level variables included in the study are presented in Table 1.

Hypothesis 1 Rapport will positively predict autonomy, competence, and relatedness.

Cross-sectional associations

Within-Persons To evaluate hypothesis 1, three multilevel models were computed in which the satisfaction of a single need was regressed upon concurrent rapport and concurrent satisfaction of one's two other needs. One's concurrent fulfillment of the other two needs was included in the model because basic psychological needs are strongly associated (Table 1) and because of the conceptual overlap between relatedness and rapport. These models were estimated as follows:

$$\begin{aligned} \text{Autonomy}_{ij} = & \gamma_{00} + \gamma_{10}\text{Rapport}_{ij} + \gamma_{20}\text{Competence}_{ij} \\ & + \gamma_{30}\text{Relatedness}_{ij} + \gamma_{01}\overline{\text{Rapport}_{.j}} \\ & + \gamma_{02}\overline{\text{Competence}_{.j}} + \gamma_{03}\overline{\text{Relatedness}_{.j}} \\ & + u_{0j} + e_{ij} \end{aligned}$$

$$\begin{aligned} \text{Competence}_{ij} = & \gamma_{00} + \gamma_{10}\text{Rapport}_{ij} + \gamma_{20}\text{Autonomy}_{ij} \\ & + \gamma_{30}\text{Relatedness}_{ij} + \gamma_{01}\overline{\text{Rapport}_{.j}} \\ & + \gamma_{02}\overline{\text{Autonomy}_{.j}} + \gamma_{03}\overline{\text{Relatedness}_{.j}} \\ & + u_{0j} + e_{ij} \end{aligned}$$

$$\begin{aligned} \text{Relatedness}_{ij} = & \gamma_{00} + \gamma_{10}\text{Rapport}_{ij} + \gamma_{20}\text{Autonomy}_{ij} \\ & + \gamma_{30}\text{Competence}_{ij} + \gamma_{01}\overline{\text{Rapport}_{.j}} \\ & + \gamma_{02}\overline{\text{Autonomy}_{.j}} + \gamma_{03}\overline{\text{Competence}_{.j}} \\ & + u_{0j} + e_{ij}. \end{aligned}$$

Table 3 Model evaluating rapport's temporally precedent associations with changes in basic need satisfaction

	Autonomy					Competence					Relatedness				
	<i>b</i>	<i>p</i>	CI	<i>R</i> _{Partial}		<i>b</i>	<i>p</i>	CI	<i>R</i> _{Partial}		<i>b</i>	<i>p</i>	CI	<i>R</i> _{Partial}	
Level 1 predictors (within-person)															
Rapport_{Int}	.16	< .001	.11	.22	.17	.21	< .001	.16	.27	.22	.49	< .001	.43	.56	.41
Autonomy _{Int}	–	–	–	–	–	.44	< .001	.39	.50	.44	.39	< .001	.32	.47	.31
Competence _{Int}	.43	< .001	.38	.48	.44	–	–	–	–	–	.06	.144	–.02	.13	.04
Relatedness _{Int}	.25	< .001	.20	.29	.32	.04	.150	–.01	.08	.04	–	–	–	–	–
Outcome _{Int} (<i>t</i> – 1)	–.02	.287	–.06	.02	–.03	–.07	.003	–.11	–.02	–.10	–.05	.015	–.10	–.01	–.07
Level 2 predictors (between-person)															
Rapport_{Chronic}	.26	.002	.10	.43	.10	.23	.011	.05	.42	.08	.57	< .001	.39	.75	.19
Autonomy _{Chronic}	–	–	–	–	–	.68	< .001	.51	.84	.24	.32	.004	.11	.54	.09
Competence _{Chronic}	.53	< .001	.40	.66	.23	–	–	–	–	–	–.11	.301	–.31	.09	–.03
Relatedness _{Chronic}	.22	.003	.07	.37	.09	–.10	.239	–.27	.07	–.04	–	–	–	–	–

Hypothesized estimates of interest are highlighted in bold

bs represent unstandardized effect estimates

Models revealed support for hypothesis 1 (see Table 2). Controlling for satisfaction of one's other needs, interaction-level rapport was positively related to concurrent autonomy competence, and relatedness. These findings suggest that rapport has a meaningful but distinct relationship with each of one's basic psychological needs in one's social interactions.

Between-Persons The prior sets of analyses also tested associations between interaction rapport and interaction need satisfaction at level 2 (i.e., between persons). As these analyses are at level 2, they collapse across interactions and can be thought of as chronic levels of rapport and chronic interaction need satisfaction (Baker et al. 2017; Crocker and Canevello 2008). Chronic rapport significantly and independently predicted chronic satisfaction of one's needs for autonomy, competence, and relatedness beyond satisfaction of one's other needs.

Testing temporally precedent associations

Within-Persons, Lagged Given that the cross-sectional findings supported hypothesis 1, more conservative models were tested in which lagged values of one's criterion need satisfaction were included in the model. The inclusion of the lagged outcome alters the interpretation of associations such that each estimate becomes an estimate of predicted change in need satisfaction from one's previous interaction. These models were estimated as follows (please note that "(*t* - 1)" indicates a lagged predictor and that a lack of "(*t* - 1)" indicates a concurrent variable):

$$\begin{aligned} \text{Autonomy}_{ij} = & \gamma_{00} + \gamma_{10}\text{Rapport}_{ij} + \gamma_{20}\text{Competence}_{ij} \\ & + \gamma_{30}\text{Relatedness}_{ij} + \gamma_{40}\text{Autonomy}(t-1)_{ij} \\ & + \gamma_{01}\text{Rapport}_{.j} + \gamma_{02}\text{Competence}_{.j} \\ & + \gamma_{03}\text{Relatedness}_{.j} + u_{0j} + e_{ij}. \end{aligned}$$

$$\begin{aligned} \text{Competence}_{ij} = & \gamma_{00} + \gamma_{10}\text{Rapport}_{ij} + \gamma_{20}\text{Autonomy}_{ij} \\ & + \gamma_{30}\text{Relatedness}_{ij} + \gamma_{40}\text{Competence}(t-1)_{ij} \\ & + \gamma_{01}\text{Rapport}_{.j} + \gamma_{02}\text{Autonomy}_{.j} \\ & + \gamma_{03}\text{Relatedness}_{.j} + u_{0j} + e_{ij}. \end{aligned}$$

$$\begin{aligned} \text{Relatedness}_{ij} = & \gamma_{00} + \gamma_{10}\text{Rapport}_{ij} + \gamma_{20}\text{Autonomy}_{ij} \\ & + \gamma_{30}\text{Competence}_{ij} + \gamma_{40}\text{Relatedness}(t-1)_{ij} \\ & + \gamma_{01}\text{Rapport}_{.j} + \gamma_{02}\text{Competence}_{.j} \\ & + \gamma_{03}\text{Autonomy}_{.j} + u_{0j} + e_{ij}. \end{aligned}$$

Again, findings were in the predicted direction (Table 3), indicating that interaction rapport positively predicts changes in one's autonomy, competence, and relatedness beyond satisfaction of one's other needs.

Between-Persons, Chronic Predicting Follow-Up Having found evidence for the association between rapport and need satisfaction at both the within- and between-person levels and initial evidence of the temporal precedence of rapport, greater evidence of a temporal relationship between rapport and need satisfaction was sought. To test this, follow-up general need satisfaction was regressed onto chronic rapport (i.,

rapport averaged across all interactions reported during the 2 weeks of diary entries). While these data are not causal, using chronic rapport to predict one's need satisfaction at a follow-up assessment may provide greater evidence that rapport may temporally precede need satisfaction.

Regressing each of one's needs at follow-up onto chronic rapport revealed that chronic rapport predicted significantly less satisfaction of one's general needs for autonomy ($b = -.41, p = .004, CI[-.69, -.14], r_{\text{partial}} = -.30$) and nonsignificantly less competence ($b = -.24, p = .095, CI[-.51, .04], r_{\text{partial}} = -.18$) or relatedness ($b = -.22, p = .082, CI[-.46, .03], r_{\text{partial}} = -.18$). When controlling for baseline need satisfaction rapport is not predictive of any of the needs. When controlling for one's other types of need satisfaction at follow-up, rapport continued to negatively predict autonomy but did not significantly predict competence or relatedness.

Exploratory Aim 1 Examine whether intimacy and relationship type of interactants moderates the basic associations between rapport and need satisfaction.

Cross-sectional associations

Within-Persons Main effect associations revealed that our categorical relationship type variable differed in terms of autonomy $F(1062) = 8.04, p < .001$, competence $F(1057) = 2.77, p = .026$, and relatedness $F(1063) = 61.54, p < .001$. For autonomy, interactions with family and significant others resulted in significantly less autonomy satisfaction than was felt with strangers. For competence, none of the individual comparisons with strangers reached statistical significance ($ps > .276$). For relatedness, friends, family, and significant others, each provided greater relatedness satisfaction than strangers. Similar results were seen when substituting intimacy for relationship type. To the extent that the individual felt the interaction was more intimate, they reported feeling less autonomy ($b(1198) = -.04, p = .033$), less competence ($b(1189) = -.04, p = .010$), and more relatedness ($b(1196) = .27, p < .001$) satisfaction.

We also entered interactions between these relationship types and our focal predictor of rapport in predicting satisfaction of each need. Interactions between relationship type and rapport predicting need satisfaction were mixed: autonomy ($F(1041) = 3.09, p = .015$), competence ($F(1017) = 2.04, p = .086$), and relatedness ($F(1044) = .49, p = .741$). When breaking down the significant interaction for autonomy, no significant interactions between specific relationship types emerged as statistically significant when compared with strangers ($ps > .053$). Similar results were seen when substituting intimacy for relationship type. There were no significant interactions between

intimacy and rapport predicting need satisfaction ($ps > .059$).

Between-Persons While we could not test our relationship type variable at the between-person level because that would have no intelligible interpretation, we were able to do this with our intimacy variable. Main effect associations revealed that individuals who tended to report more intimate interactions experienced nonsignificantly different autonomy ($b(116) = -.01, p = .630$), significantly less competence ($b(115) = -.09, p = .013$), and significantly greater relatedness ($b(126) = .21, p < .001$).

Interactions between rapport and intimacy at the between-person level revealed that individuals who tended to rate interactions as more intimate did not significantly differ in their associations between rapport and need satisfaction ($ps > .076$).

Testing temporally precedent associations

Within-Persons, Lagged Results assessing changes in need satisfaction revealed main effects such that relationship type was associated with autonomy ($F(950) = 10.30, p < .001$), competence ($F(940) = 2.50, p = .041$), and relatedness ($F(952) = 54.49, p < .001$) changes. Breaking relationship type main effects down, interactions with family and significant others were associated with more negative changes in autonomy than were interactions with strangers. For competence change, none of the individual comparisons approached statistical significance ($ps > .509$). Interactions with friends, family, and significant others all provided greater positive changes in relatedness than did interactions with strangers. Main effects when intimacy was substituted for relationship type revealed that more intimacy was associated with less autonomy satisfaction ($b(1066) = -.04, p = .021$), nonsignificantly less competence satisfaction ($b(1081) = -.03, p = .054$), and greater relatedness satisfaction ($b(1093) = .29, p < .001$) changes.

Interactions between relationship type and rapport predicting need satisfaction were again mixed and paralleled the cross-sectional results: autonomy ($F(1157) = 4.28, p = .001$), competence ($F(1137) = 1.52, p = .181$), and relatedness ($F(1166) = .49, p = .781$). When breaking down these autonomy results, only significant others differed from strangers, demonstrating a strengthened association between rapport and autonomy ($b = .236, p = .044$). When assessing changes in need satisfaction, no interactions between intimacy and rapport emerged as statistically significant ($ps > .154$).

Between-Persons, Chronic Predicting Follow-Up When predicting follow-up need satisfaction, chronic intimacy did not emerge as a main effect for any of the needs ($ps > .091$). Likewise, the interaction between intimacy and rapport was

not statistically significant when predicting any of the three needs ($ps > .666$). Controlling for baseline satisfaction of the outcome need, as well as follow-up values of the other needs, the main effect pattern was the same ($ps > .291$), as was the interaction pattern ($ps > .359$).

Discussion

These findings, in line with hypothesis 1, suggest that perceptions of rapport (i.e., positive affect, mutual attention, and coordination) are related to satisfaction of each of one's most fundamental, psychological needs for autonomy, competence, and relatedness in interactions at the within- and between-person levels. We did not find evidence for the positive role of rapport in general need satisfaction with negative estimates of associations between autonomy and rapport and null associations with the other needs. Within-person examination of rapport and need fulfillment revealed that rapport in one's interactions predicted satisfaction of autonomy, competence, and relatedness in that interaction beyond variance attributable to one's other needs. Similarly, between-person examination revealed that chronic rapport (i.e., across 2 weeks of interactions) predicted chronic satisfaction of autonomy, competence, and relatedness in interactions beyond variance attributable to one's other needs.

Lagged analyses further indicated that rapport predicted changes in autonomy, competence, and relatedness satisfaction, within-persons. Still, between-person associations between chronic rapport and follow-up general need satisfaction did not provide convergent support. While follow-up autonomy was negatively predicted by chronic rapport this did not extend beyond baseline values of autonomy, suggesting weak support for that negative pathway, thus we do not interpret it further.

It is particularly striking that, in the diary analyses, autonomy and competence are predicted beyond relatedness, given that relatedness has so much theoretical overlap with rapport. This seems to clearly establish rapport as a meaningful construct that extends beyond relatedness theoretically (in terms of its components of positive affect, mutual attention, and coordination) and empirically. Taken together, these results have strong implications for the value of perceiving that one's interactions are of a high quality (i.e., have large amounts of rapport).

Different kinds of relationships

We then repeated our analyses, examining main effects and interactions of relationship type and perceived intimacy, as they might moderate our focal associations of rapport and need satisfaction. Consistent with other research (e.g., Baker

et al. 2017, revise and resubmit; La Guardia et al. 2000), there were clear main effects such that having more intimate interactions or being in different types of relationships was associated with different levels of need satisfaction. These effects suggested that closer interactions (whether assessed as closer relationship types or more intimate interactions) resulted in uniquely more relatedness and less autonomy need satisfaction. Effects were less consistent for competence, but there did appear to be a negative trend such that closer interactions resulted in less competence satisfaction. For competence, however, the observed effect sizes did appear to be relatively small and several main effects analyses were nonsignificant, and therefore, we encourage caution in interpretation.

These are not the first results that suggest closeness may be uniquely associated with less autonomy satisfaction. Indeed, Hadden et al. (2016) found that when partners in established romantic relationships anxiously desire greater closeness, this often results in less autonomy need satisfaction even while providing greater satisfaction for relatedness. Conversely, those relationships with partners who want, expect, and desire less closeness, provide uniquely more satisfaction for autonomy but less for relatedness. Still, we do wish to note that these are *unique* associations and when one observes zero-order, within-person effects, intimacy was consistently positively related to each indicator of need satisfaction.

The lack of significant interactions in the models tested may suggest that rapport's ability to confer need satisfaction is a basic process that occurs across many kinds of relationships. Indeed 22 out of the 24 interactions that were tested for possible differences were not statistically significant, but absence of evidence is not synonymous with evidence of absence. In the case of the two statistically significant interactions (rapport by relationship type predicting cross-sectional and lagged autonomy), interactions with acquaintances, friends, family, and significant others did not differ from interactions with strangers except for one instance where significant others differed from strangers when predicting changes in autonomy from the previous interaction. Given that this association appeared so infrequently and did not replicate in any other levels of analysis, or with similar constructs (i.e., intimacy), we encourage caution in interpretation until and unless this association can be replicated independently. Overall, these results suggest that unique associations between rapport and needs for autonomy, competence, and relatedness are basic processes that occur across time and across perceptions about those relationships, between-people, within-people, are meaningful for interaction need satisfaction, and we lack evidence suggesting these associations differ by type or intimacy of relationships.

Contextualizing these findings in the broader literature

In integrating the rapport and SDT literatures, we find here that one means by which rapport might confer benefits for individuals is through satisfaction of one's most basic psychological needs. Our work builds upon that of Gurland and colleagues who found that adults who were more autonomy-supportive toward children inspired greater feelings of rapport in those children. Interestingly, despite our rather different conceptualization and operationalization of rapport (including a perception of more than one member of an interaction, following real-life interactions, and using a more theoretically-derived measure of rapport) our findings that self-determination and rapport go hand-in-hand are consistent with those of other researchers (Gurland and Grolnick 2003, 2008; Gurland et al. 2012; Wuyts et al. 2018). These findings also support our reclassification of the outcomes associated with rapport found by Grantiz et al. (2008), through the lens of self-determination theory. Though not directly tested in this investigation, this may explain how rapport provides benefits and we hope it will inspire future research to continue to explore the process of rapport. We also think these convergent results across conceptualizations may be a positive sign that despite its inconsistent operationalization and measurement in the literature, there is promise that findings on rapport may be harmonized in the future. Likewise, we did not test causality but this work supports findings that rapport causally increases constructs similar to the basic psychological needs (Hove and Risen 2009).

Adding to these extensions of rapport in the context of self-determination, this work extends a vast body of knowledge represented by Self-Determination Theory's mini-theory: Relationship Motivation Theory (RMT; Ryan and Deci 2017a, b). While RMT takes large steps to assess both distal, between-person relationship quality and more proximal quality of relationships with individuals over time, the present work takes a step to an even finer grain of analysis by assessing individual interactions. In line with RMT's first, second, third, fourth, and fifth propositions that describe how relationships can benefit people, this work shows that individual interactions can benefit relationships indirectly benefiting people more broadly. Drawing on the hierarchical model of motivation (Vallerand 1997, 2000, 2007), we expect that these associations are likely similar at both the level of relationships (as demonstrated in evidence supporting RMT) and the level of interactions (as demonstrated here). Therefore, it seems particularly striking that the benefits of rapport in a given interaction extend beyond elements of the relationship itself. This extension beyond the relationship itself is also a noteworthy advancement of RMT

given that RMT focuses specifically on *close* personal relationships. This work is not the first to integrate SDT and social interactions (Weinstein et al. 2010), but it may be the first to directly compare them across a wide array of relationship types.

This research also supports a large body of literature suggesting that relationships are beneficial to individuals, largely because of the satisfaction of basic needs (e.g., Hadden et al. 2016; Knee et al. 2013; La Guardia and Patrick 2008; Patrick et al. 2007). The present results may not be entirely surprising given that need satisfaction has been found to be highly related to several indicators of relationship quality, which is likely related to interaction quality (e.g., Patrick et al. 2007). Notably, though, this research assessed interactions in a wide range of relationships across 2 weeks. Indeed, participant descriptions of their interactions ranged from important ones with close relationship partners (e.g., discussions of one's children with one's spouse) to those that are more objectively superficial with strangers (e.g., "talking about nothing in particular"), suggesting that a wide variety of interactions were captured in this research. This does not diminish the importance of close relationships; instead we believe it suggests that scholars should strive to understand a wider breadth of interactions and relationships because of their importance for individuals (e.g., Sandstrom and Dunn 2014a, b).

Given the importance of basic psychological needs for a wide range of indicators of hedonia and eudaimonia, many domains of life, and health behaviors, this work complements studies assessing need satisfaction as an outcome in and of itself (e.g., Hadden et al. 2016; Sheldon et al. 2011) and offers a means by which need satisfaction might be increased. Given rapport's tight theoretical definition and an assessment method that adhered to its theoretical rigor, it seems likely that interventions to increase the rapport felt between interactants might be a realistic future avenue of research. While rapport is fundamentally a dyadic construct, skills training that teaches people to increase rapport in their interactions, might thereby increase need satisfaction. Likewise, perhaps people's expectancies of interactions might be changed through intervention. Perhaps teaching people to aim for more positive interactions or to give others their full attention might increase the need satisfaction they feel in those interactions. Indeed, Sandstrom and Dunn (2014a) showed that telling people to strive for things like eye contact and conversation with a coffee house barista led to more relatedness and, in turn, more positive affect. Similarly, Karremans et al. (2017) suggested that mindfulness (which likely leads to more mutual attention) should be positively related to relationship benefits.

Strengths, limitations, and future directions

A strength of the present investigation is the intensive data collection that took place. As past authors have pointed out, diary methodology overcomes several limitations of retrospective reports (Bolger et al. 2003) because participants are providing responses in a more temporally proximal fashion. Additionally, the use of multiple time points and assessment of change in outcomes indicates that, as hypothesized, rapport predicts need satisfaction and provides plausible evidence for the influence of rapport on need satisfaction. It is encouraging that the associations replicated at both between- and within-person levels when analyzed concurrently and using temporal precedence. Still, we did not test causality and our work does not rule out reciprocal influence of need satisfaction on rapport.⁵ Instead, these analyses (in particular the supplemental within-person analyses) suggest evidence for bidirectional associations between rapport and need satisfaction. While the between-person analyses showed somewhat less consistent associations, we caution against interpreting null effects.

Replicating some past results (e.g., Gurland and Grolnick 2003, 2008; Gurland et al. 2012; Vicaria et al. 2015), we found that rapport can be measured as a self-report variable. While self-report variables are not without problems, this allowed us to examine perceptions of rapport rather than 3rd party views of the construct. We argue that in this context, self-report is a strength because there are times when self-reported rapport may be more meaningful than rapport as it is rated by objective coders (DePaulo and Bell 1990). Of interest in the present work is how perceptions of rapport impact perceptions of need satisfaction, and self-report is an apt way to assess one's perceptions. Numerous studies have shown that rapport may be studied in several ways and that those different methodologies offer unique benefits (Altman 1990). Therefore, it will be beneficial to replicate these findings making use of other methodologies to assess rapport (e.g., ratings from objective judges).

We also believe future research should assess need frustration along with need satisfaction. Sheldon et al. (2011) suggested that need satisfaction in some circumstances is an outcome of interpersonal activity (lending support to our hypothesized model), while need frustration is a motivating force. Future investigations of the associations between

rapport and need frustration might expect the need frustration—> attempts to experience rapport path.

Additionally, future research would benefit from examining how rapport interacts with other constructs (e.g., individual differences) to benefit individuals. Recent research (Duffy and Chartrand 2015) has demonstrated that engaging in behaviors that increase rapport is more common among those higher in extraversion when they possess affiliative goals. In addition to certain types of individuals who are more likely to generate rapport in certain situations, there may be individuals who benefit more from rapport (e.g., those who are lonely).

Finally, we hope these findings will be extended to examine dyadic perceptions of rapport. Past theorizing suggests that dyadic assessment (DePaulo and Bell 1990) may reveal that these dyadic patterns have a whole that is greater than the sum of their parts. Rapport between interactants should be highly correlated, but when both partners, as opposed to only one partner, feel that an interaction was filled with rapport, the greatest benefits might emerge.

While we propose these results as a basic process operating in all kinds of relationships, it is worth noting that we tested this process in a mostly female undergraduate sample with relatively few interactions with strangers reported. Several factors distinguished our participants from the average undergraduate sample, but future research should replicate these results in other samples to establish how generalizable the effects are. Some factors that distinguished our sample include participants who are somewhat older than the average undergraduate sample and an incredible amount of racial/ethnic diversity. Indeed, there was no majority racial/ethnic group in our sample. Moreover, we believe it is likely that our results will hold in other sample types given extensive evidence for the validity of self-determination constructs and their antecedents and consequences in diverse samples (e.g., Chen et al. 2015; Deci et al. 2001). Similarly, while relatively few strangers were included in this sample, the second most prevalent type of interaction observed was between people and acquaintances, suggesting that the observed processes are not confined to close relationships.

Conclusion

This research is, to the best of our knowledge, the first to explore how rapport in one's interactions relates to satisfaction of one's most basic psychological needs. Results revealed that interactions perceived to be of a higher caliber (i.e., those with more rapport) were more satisfying to one's needs both within-persons and between-persons. We studied a broad range of interactions, which allows our results to be of interest to nearly any field investigating interpersonal life. Moreover, categorically coded relationship types and

⁵ We repeated our tests of temporal precedence with need satisfaction entered as predictors of rapport (see supplemental tables). The lagged models revealed that each need was a statistically significant predictor of rapport controlling for the rapport of the previous interaction. The between-persons models of baseline need satisfaction predicting chronic rapport did not provide converging evidence in that none of the needs were statistically significant predictors of rapport.

participant ratings of intimacy for interactions did not alter observed effects suggesting a pervasive phenomenon that surpasses the contributions of relationship quality or closeness. We expect several fields (e.g., organizational, clinical, social, and cognitive psychology; marketing; business) to be interested in these results given investigation of rapport and need satisfaction in those fields, and a massive body of evidence demonstrating the benefits of need satisfaction.

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Compliance with ethical standards

Conflict of interest Zachary Baker declares that he has no conflict of interest. Emily Watlington declares that she has no conflict of interest. C. Raymond Knee declares that he has no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent was obtained from all individual participants included in the study.

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