



Do extrinsic goals affect romantic relationships? The role of basic psychological need satisfaction

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Abstract

Two studies were conducted to examine how individuals' intrinsic and extrinsic goals were related to their relationship well-being as mediated by basic psychological need satisfaction. In Study 1, a survey was administered to 96 participants who were in romantic relationships. The results showed that individuals' perceptions of their partners' extrinsic and intrinsic goals were associated with their relationship satisfaction in opposite directions, and that these relations were mediated by their basic psychological need satisfaction. Using the Actor–Partner Interdependence Model, Study 2 investigated how basic psychological need satisfaction mediated the association between extrinsic and intrinsic goals and relationship well-being among 104 dyads who were in romantic relationships. The results suggested that the dyads' intrinsic goals were positively associated with basic need satisfaction while their extrinsic goals showed the reverse relation, and that basic psychological need satisfaction mediated the relations between extrinsic and intrinsic goals and relationship well-being. The negative association between extrinsic goal pursuits and relationship well-being was the same regardless of the individuals' or their partners' level of extrinsic goals.

Keywords Self-determination theory · Intrinsic goals · Extrinsic goals · Basic need satisfaction · Relationship well-being

Introduction

Research examining individuals' pursuit of extrinsic or intrinsic life goals, and the associated consequences has been informed by Self-Determination Theory (SDT) (Kasser and Ryan 1993, 1996; Ryan and Deci 2000). The goal of the current study was to connect three mini-theories of SDT, Goal Contents Theory (GCT), Basic Psychological Needs Theory (BPNT), and Relationships Motivation Theory (RMT), to expand the understanding of how individuals' life goals can affect their relationship satisfaction.

According to SDT, compared to extrinsic goals¹, the pursuit of intrinsic goals is more likely to provide basic psychological need satisfaction (defined as the need for autonomy,

competence, and relatedness, Sheldon and Kasser 1998; Niemiec et al. 2009). Meanwhile, basic psychological need satisfaction is essential for individual psychological, physical, and relational well-being (for a review, see Deci and Ryan 2000). Building on findings on extrinsic and intrinsic goal pursuits, basic psychological need satisfaction, and psychological outcomes (e.g., Kasser and Ryan 1993, 1996, 2001; Solberg et al. 2004), the present research aimed at proposing a mechanism to explain the quality of romantic relationships: basic psychological need satisfaction would mediate the association between extrinsic/intrinsic goal pursuits and relationship quality in romantic relationships. Furthermore, additional effort was put into delineating the effects of one's own (i.e., actor's) and the partner's extrinsic goals; and the possibility of matches or similarity effects between an actor's and the partner's goals. There were two studies conducted as part of this research. The first study tested whether one's perception of a partner's goal pursuits predicted one's romantic relationship well-being, with basic psychological

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¹ In the original research of extrinsic goals by Kasser and Ryan (1993, 1996), the term “aspirations” is often used instead of “goals” or “goal pursuits”. Aspirations are defined as people's life goals. In this paper, the more general terms “goal pursuits” and “goals” are used instead of “aspirations”.

need satisfaction as a mediator. The second study examined how both the actor's and partner's goal pursuits were associated with the actor's relationship satisfaction, and whether the actor's basic psychological need satisfaction mediated the aforementioned association.

Goal content theory: pursuit of intrinsic and extrinsic goals

According to SDT (Deci and Ryan 1985, 2000), the intrinsic-extrinsic dimension is one of the key distinctions in people's goals. Individuals' pursuit of intrinsic versus extrinsic goals has been shown to be related to various psychological and interpersonal outcomes. Kasser and Ryan (1993, 1996, 2001) proposed three subcategories under the pursuit of intrinsic goals: (a) self-acceptance goals, which aim for psychological growth, competence, and meaning in life; (b) affiliation goals, which aim to build close relationships with family, lovers, and friends; and (c) community goals, which aim to help others' lives and make the world a better place through one's actions. There are also three subcategories of extrinsic goals: (a) financial or wealth success goals, which refers to having a great amount of money and numerous material possessions; (b) fame and appearance goals, for instance, being admired or well-known; and (c) appearance goals, which refers to being attractive or presenting an attractive physical image for others to admire.

The intrinsic versus extrinsic distinction was also one of the primary dimensions of the circumplex in Grouzet et al. (2005) large-scale cross-cultural study on goals across six continents. In other words, the two types of goals are at the opposite ends of the circumplex and in conflict with each other. For example, striving for financial success (an example of an extrinsic goal) is opposite to striving for affiliation and community feeling (an example of an intrinsic goal). This opposition could be associated with the fact that the pursuit of extrinsic goals focuses mostly on outcomes that are related to appraisal by others in the society that, do not inherently satisfy basic psychological needs in contrast to the pursuit of intrinsic goals.

Basic psychological needs theory: the three basic psychological needs

According to BPNT, the three basic psychological needs are autonomy, competence, and relatedness (Ryan and Deci 2000). Below, we will describe the three needs and how they could be fulfilled or undermined.

Autonomy

Autonomy is the need to feel volition regarding one's actions and to fully endorse one's behaviors. People feel

autonomous when their actions or behaviors are in accord with the self and free from external controls or pressures (Deci 1975). Previous studies have suggested that the need for autonomy can be supported through providing choice (Zuckerman et al. 1978), and by acknowledging people's inner experiences or feelings (Koestner et al. 1984), while external controls, such as extrinsic rewards (see the classic study by Deci 1971) or competition, undermined people's autonomy (Deci et al. 1981).

Competence

Competence is the need to feel effective in the environment and be able to achieve desired outcomes. People feel competent when they master challenges (White 1959). Informational and personally meaningful positive feedback is beneficial to feeling competent (Deci and Ryan 1985), while feedback provided with conditional regard may lead to insecure/unstable self-esteem and incompetence (Deci and Ryan 1995).

Relatedness

Relatedness is the need to feel connected and to form strong, stable interpersonal bonds (Ryan 1993; Baumeister and Leary 1995). People feel connected when their relational partners are supportive or responsive. Specifically, the relatedness need will be satisfied when a person is cared for non-contingently by his/her relational partner without excessive control, neglect or rejection (La Guardia and Patrick 2008).

Extrinsic/intrinsic goals and basic need satisfaction in a relationship

Within romantic relationships, there are some reasons to believe that extrinsic goal pursuits can undermine basic need satisfaction. First, the pursuit of wealth, fame, and image (i.e., extrinsic goals) opposes the pursuit of affiliation and community (Grouzet et al. 2005), and is then detrimental to one's basic need satisfaction. If individuals place a priority on pursuing extrinsic goals, they may make resources scarce for attaining intrinsic goals. A typical example is the work–family conflict that arises when one works overtime instead of spending quality time with one's partner; this is detrimental to the attainment of the relatedness of basic needs. Another example would be that people with high extrinsic goals might try to satisfy their partners through materialistic ways instead of connecting with their partners. Second, people who endorse extrinsic goals also tend to perceive that their partner's love is contingent on their behaviors (Assor et al. 2004). To gain approval, they might choose to conform to their partners, obstructing their true nature, which also undermines their experience of autonomy. Third,

people who tend to pursue extrinsic goals often define their self-worth based on how others view them (Kernis 2003). At the same time, most people are apprehensive of being evaluated and tend to adopt social avoidance goals when under evaluation, which means that they often attempt to avoid negative outcomes in interpersonal relationships (Elliot et al. 2006). The adoption of social avoidance goals may provoke aversive thoughts, feelings, and behaviors in relationships, so others are kept at a distance. This may result in interpersonal conflicts, which undermine the fulfillment of the need for relatedness as well. Finally, applying the above reasoning, extrinsic goals could have the same impact on one's partners.

Relationships motivation theory: basic need satisfaction in a relationship and relationship well-being

The abovementioned three basic needs are the “innate psychological nutrients that are essential for ongoing psychological growth, integrity, and well-being” (Deci and Ryan 2000, p. 229). Through the fulfillment of these needs, people attain psychological health, life satisfaction, vitality, and adaptive functioning.

Research has repeatedly shown that basic psychological need satisfaction plays an important role in forming secure close relationships. In one of the first studies that connected the role of basic need satisfaction and attachment, La Guardia et al. (2000) found that there was substantial within-person variation in a person's attachment security to various close others (defined as mother, father, romantic partner, and best friend). This variability was predicted by the extent to which the “close others” satisfied one's basic needs. Another set of studies by Ryan et al. (2005) also found that the provision of basic psychological needs by one's partner predicted how much an individual would rely on him or her for emotional support. The importance of fulfilling basic needs in most kinds of close relationships was generalized across gender in Russia, South Korea, Turkey, and the United States. Similarly, in a dyadic study by Deci et al. (2006), the results showed that perceived autonomy support from a close friend predicted need satisfaction, emotional reliance, attachment security, and dyadic adjustment. More importantly, both receiving and giving autonomy support were important to relationship well-being.

The importance of need satisfaction was then further extended to explain the quality of romantic relationships. Relationship well-being is often determined by how partners satisfy one another's basic psychological needs (La Guardia and Patrick 2008). Basic psychological needs are supported through optimal social contexts. Partners who support individuals' basic psychological needs are more likely to have better relationship outcomes, whereas partners who thwart

these needs are more likely to experience conflict and dissatisfaction. Imagine two couples in a relationship: the first couple, couple A, support each other's basic psychological needs, they are fully autonomous without suppressing their true selves in the relationship, they feel competent when they are with their partner and they are deeply connected with their own partner. On the contrary, another couple, couple B, suppress their true selves, and remain in the relationship because of shame, guilt, obligations or expectations from others, they might feel belittled by their partner, and they do not emotionally relate to each other. These two couples differ in the sense that couple A fulfills each other's basic psychological needs, namely, autonomy, competence, and relatedness while couple B does not.

Patrick et al. (2007) conducted a meta-analysis and found that psychological need satisfaction in a relationship was associated with individual and relationship well-being. They found that basic need fulfillment of both partners in a dyad resulted in a unique contribution to relationship well-being. They also found that people who experienced greater need fulfillment had higher daily post-conflict relationship quality. In sum, when people's basic psychological needs were fulfilled in a relationship, they were more likely to stay in the relationship for intrinsic reasons. Need satisfaction is important to relationship quality and adaptive relationship behaviors, and both giving and receiving basic psychological need satisfaction uniquely contribute to relationship well-being outcomes. In other words, both individuals (i.e., actors) and partners play a role in each other's basic need satisfaction and subsequent relationship outcomes. Therefore, we proposed that both actors' and partners' life goals could affect one's basic psychological need provision or fulfillment in a relationship.

Extrinsic/intrinsic goals and relationship well-being

Research findings largely support the idea that the pursuit of extrinsic goals could be detrimental to well-being. For example, focusing on extrinsic goals is negatively correlated with a broad range of well-being indicators, including self-actualization, positive affect, vitality, and global functioning. Focusing on extrinsic goals is also positively correlated with depression, negative affect, anxiety, physical symptoms, and behavior disorders (Kasser and Ryan 1993, 1996, 2001; Solberg et al. 2004). The negative associations between extrinsic goal pursuits and well-being have been replicated across different cultural groups, including Australian (Saunders and Munro 2000), English (Chan and Joseph 2000), German (Schmuck et al. 2000), Russian (Ryan et al. 1999), South Korean (Kim et al. 2003), and Singaporean research participants (Kasser and Ahuvia 2002), and across different age groups, such as adolescents (Williams et al. 2000), college students (Vansteenkiste

et al. (2006), young adults (Niemiec et al. 2009), and older adults (Van Hiel and Vansteenkiste 2009).

In terms of extrinsic goals and relationship well-being, early evidence shows that the pursuit of wealth, image, and fame are detrimental to relationship well-being. In a self-report study by Kasser and Ryan (2001), a focus on extrinsic goals was related to lower-quality relationships, as measured by the duration of relationships and the participants' use of negative adjectives (e.g., jealousy and emotional volatility) to describe these relationships. The opposite was true for subjects pursuing intrinsic goals. Solberg et al. (2004) also found that highly materialistic people tended to have lower relationship quality. Studies also found that spousal materialism was negatively associated with marital satisfaction (Carroll et al. 2011; Dean et al. 2007). Other studies have further supported the conclusion that focusing on money or monetary goals (i.e., extrinsic goals) may be detrimental to relationship quality. For instance, in a study involving a nationally representative sample of 600 married couples in the United States, Dean et al. (2007) found that perceived financial problems accounted for the relationship between materialism and marital satisfaction. Vohs et al. (2006) proposed a self-sufficiency hypothesis, which refers to the fact that money allows people to achieve goals without the help of others, and hence, money creates a sense of self-sufficiency. When people are self-sufficient, they are in an insulated state with respect to attaining personal goals and prefer to be separate from others, which implies that a focus on extrinsic goals may hinder relationship quality.

Despite the vast amount of research on the relations between intrinsic/extrinsic goals and basic needs, basic needs and relationship well-being, and intrinsic/extrinsic goals and relationship well-being, literature that explains the mechanism on how the pursuit of extrinsic goals is negatively related to relationship quality is scarce. Therefore, we proposed that basic psychological need satisfaction can be applied as an organizing theme between the two constructs. Furthermore, most of the abovementioned studies have focused on how individuals' pursuit of extrinsic goals affects their self-report of relationship quality, but do not include the effect of their partners' adoption of internal or external goals. The current research aimed at filling this gap by measuring one's (the actor's) perception of the partner's extrinsic and intrinsic goals pursuit (Study 1), and by measuring both the actor's and partner's extrinsic and intrinsic goal pursuits (Study 2).

Study 1

The hypothesis of Study 1 was that the actor's perception of the partner's intrinsic goals would positively associate with relationship satisfaction, while the actor's perception of the partner's extrinsic goals would negatively associate with

relationship satisfaction. The relation between the actor's perception of partner's goals and relationship satisfaction would be mediated by the actor's basic psychological need satisfaction.

Method

Participants

Ninety-six participants aged from 18 to 63 (23 male, 73 female, $M_{age} = 31.39$, $SD = 13.84$) were recruited through an online mass email system at a University in U.K. Participation in the study was voluntary. Participants who were above 18 and in a romantic relationship over one month were eligible. Participants' sexual orientation was not measured. Most participants were Caucasian ($N = 74$), 10 were Asian, 3 were African American, 3 were Hispanic, 3 reported some other race or ethnicity, and 3 declined to respond. All participants were either dating (66%) or married (33%), and the duration of the relationships ranged from one month to 41 years ($M_{months} = 90.34$, $SD = 126.11$).

Procedures

Upon obtaining consent from participants, they completed an online questionnaire. Participants received no compensation to complete the study; therefore, shortened version of the measures were applied to limit the duration of the study and to reduce the burden on the participants. Items that had the highest face validity were chosen for Study 1. This problem was remedied in Study 2 by using the full scale of the measures. Ethics approval from the ethics committee of The University of [Rochester] was obtained for the current study.

Measures

Basic demographics

Participants were asked to report their gender, nationality, age and relationship length.

Perceived partner extrinsic goals and intrinsic goals

The perception of a partner's intrinsic and extrinsic goals was measured by Kasser and Ryan's (1996) Aspiration Index. Participants were asked to rate the reasons for why their partners went to work or school. These two domains were chosen because work and schooling were life areas that were central to our participants who were either working adults or students, and they were also topics that participants would commonly discuss with their partners, so that individuals could easily and rightly perceive their partners'

Table 1 Study 1: correlations among main study variables and demographic variables

Variable	1	2	3	4	5	6	7
1. Gender	–	–	–	–	–	–	–
2. Age	.29**	–	–	–	–	–	–
3. Relationship length	.20	.79**	–	–	–	–	–
4. Perceived partner intrinsic goals	–.01	–.09	–.06	–	–	–	–
5. Perceived partner extrinsic goals	–.15	–.36**	–.27**	.25*	–	–	–
6. Basic need satisfaction in Relationship	–.07	–.27**	–.23**	.20	–.08	–	–
7. Relationship satisfaction	–.12	–.24*	–.18	.23*	–.08	.58**	–

Gender is coded 1 = male and 0 = female

PPIG perceived partner intrinsic goals, *PPEG* perceived partner extrinsic goals

* $p < .05$. ** $p < .01$

goal adoption. To measure perceived partner extrinsic goals, two items from Kasser and Ryan’s (1996) Aspiration Index were used. Participants rated on a 5-point scale ranging from 1 (Not at all true) to 5 (Very much true) the extent to which the statements accurately reflected the reasons for why their partners went to work or school. The items were “to have a more luxurious lifestyle” and “so that people look up to him/her”. A higher score represents higher perceived partner’s extrinsic goals. The perceived partner extrinsic goal index was computed by averaging the responses for the two items² ($\alpha = .65$, $M = 2.85$, $SD = 1.03$). To measure the perceived partner intrinsic goals, three items from Kasser and Ryan’s (1996) Aspiration Index were used. Participants rated on a 5-point scale ranging from 1 (Not at all true) to 5 (Very much true) the extent to which the statements were the reasons for why their partners went to work or school. The items were “to help improve his/her community and society”, “because it helps him/her grow as a person”, and “to have a sense of life meaning”. A higher score represents a higher perceived partner’s intrinsic goals. The perceived partner intrinsic goal index was computed by averaging the responses for the three items ($\alpha = .68$, $M = 3.50$, $SD = 0.86$).

Basic psychological need satisfaction in the relationship

Participants completed the shortened version of the Basic Need Satisfaction in Relationships Scale (La Guardia et al. 2000). The scale consists of six items, which the participants rated with a 1 (Not at all true) to 7 (Very true) likert scale. The scale assesses the extent to which participants feel that their romantic partner supports their needs for autonomy, relatedness, and competence. A sample item of the autonomy subscale is: “when I am with my partner I feel free to

be who I am”, a sample item of the relatedness subscale is: “when I am with my partner I feel a lot of closeness and intimacy”, and a sample item of the competence subscale is “when I am with my partner, I feel very capable and effective”. An overall basic need satisfaction score was derived by averaging all six items. A higher score represents a higher basic psychological need satisfaction (overall scale $\alpha = .85$, $M = 5.82$, $SD = 1.00$; see footnote 2).

Relationship satisfaction

A 2-item measure of relationship satisfaction was used to assess relationship satisfaction (“how rewarding is your relationship?” and “in general how satisfied are you with your relationship?”). Participants rated their responses to these items on a 6-point scale, 0 (Not at all) to 5 (Completely). A higher score represents higher relationship satisfaction. The relationship satisfaction score was calculated by averaging the two items ($\alpha = .96$, $M = 3.54$, $SD = 1.05$).

Results

Descriptive statistics

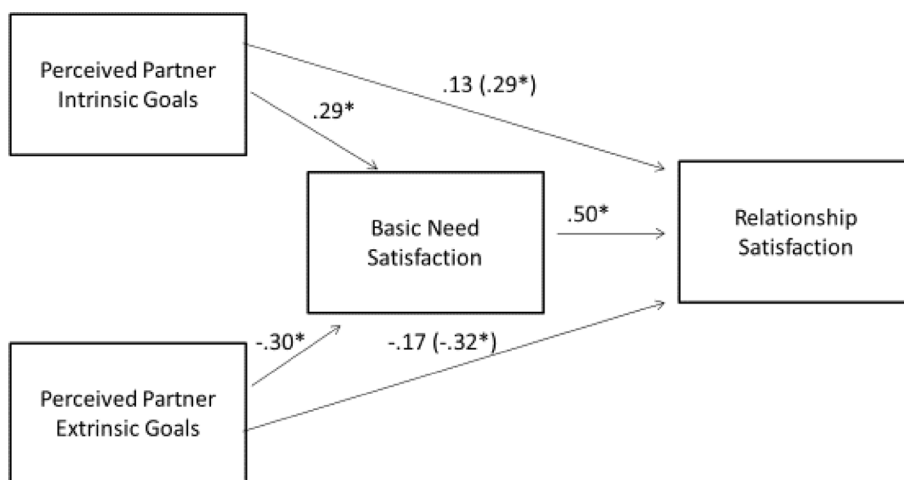
Correlational analyses among all the measured variables were conducted (see Table 1).

To test hypothesis 1, a model was built by having perceived partner intrinsic and extrinsic goals as predictors of relationship satisfaction, and this association was mediated by basic psychological need satisfaction in the relationship. In this model, age, relationship length, gender, and gender X goal interactions were controlled. The bootstrap approach (Preacher and Hayes 2004, 2008) that has been widely advocated for assessing mediation or indirect effects (Preacher et al. 2007) was used. The PROCESS version 3 macro developed by Hayes was utilized in the analyses below (Hayes 2017).

The results suggested that the indirect effects of a partner’s perceived intrinsic and extrinsic goals through basic

² In Study 1, a shortened aspiration index adopted from by Kasser and Ryan (1996) was applied to measure extrinsic aspirations. In the first paper by Kasser and Ryan (1993), extrinsic aspiration was primarily concerned about striving for financial success and economic status. Therefore, two items that covered the aspect were chosen.

Fig. 1 Study 1—perceived partner's intrinsic and extrinsic goals predict relationship satisfaction via basic need satisfaction. Values are standardized estimates. Values in parentheses are estimates after entry of the mediating variable. * $p < .05$



psychological need satisfaction in a relationship were significant (95% bootstrap percentile CI with 10,000 resamples: {0.04, 0.29} and {-0.26, -0.04}, respectively). Controlling for age, relationship length, gender, and gender X goals interactions, regression results showed that participants who perceived their partners as high on intrinsic goals reported higher basic psychological need satisfaction in their relationship ($\beta = 0.29$, $b = 0.32$, $p = .013$), while participants who perceived their partner as high on extrinsic goals reported lower basic psychological need satisfaction in their relationship ($\beta = -0.30$, $b = -0.27$, $p = .015$). Basic psychological need satisfaction was positively associated to relationship satisfaction ($\beta = 0.50$, $b = 0.47$, $p < .001$). Controlling for age, relationship length, gender, gender X goals interactions, and the mediator, the effects of perceived partner intrinsic goals and perceived partner extrinsic goals on relationship satisfaction decreased from $\beta = 0.29$, $b = 0.29$, ($p = .015$) to $\beta = 0.13$, $b = 0.14$, ($p = .184$) and from $\beta = -0.32$, $b = -.27$, ($p = .009$) to $\beta = -0.17$, $b = -.14$, ($p = .120$), respectively. The power of the indirect paths is .828 for perceived partner intrinsic goals to relationship satisfaction through basic psychological need satisfaction and .854 for perceived extrinsic goals to relationship satisfaction through basic psychology need satisfaction, respectively. Approximately 38.23% of the variance in relationship satisfaction was explained by this model (see Fig. 1).

Summary of study 1

Study 1 is among the first in the literature to demonstrate that people who reported having a partner with high intrinsic goal pursuits also tended to have a higher sense of basic psychological need satisfaction in their relationships, which was in turn associated with higher relationship satisfaction. The opposite was true for perceptions of extrinsic goal pursuits; people who reported having a partner

with high extrinsic goals tended to have a lower sense of basic psychological need satisfaction in their relationships, which was in turn associated with lower relationship satisfaction. Taken together, the results supported the hypothesis that basic psychological need satisfaction plays a mediating role. As a general decline in relationship satisfaction over time is documented in relationship research literature (e.g., Karney and Bradbury 1995; VanLaningham et al. 2001), age and relationship length were controlled for. The decline in extrinsic goals with advancing age could have been the result of higher psychological integration or a preference for goals central to basic needs as people grew older (Deci and Ryan 1991; Sheldon et al. 2006). It is also possible that people are less achievement- or goal-oriented regarding their work and daily lives as they mature. There were no gender differences in how extrinsic or intrinsic goals predicted basic psychological need satisfaction or relationship quality. This result is also consistent with past literature. For instance, Brunell and Webster (2013) found that need satisfaction in sex mediated the relation between intrinsic/extrinsic motivation for sexual behavior and psychological well-being. However, gender was not a significant moderator in their studies. Similarly, in Wood et al. (2018) study, which used the SDT framework to examine how sexual motivation explained relational and sexual satisfaction, the moderated mediation analysis also did not find any moderating effect of gender in the model.

Study 1 was not without limitations. It only included information on perceived partner goals from the participants. Additionally, the reliability of some of the scales was marginal. It also remained unclear whether there were actor and partner effects on relationship outcomes. To overcome the limitations and to further extend our understanding of how the mediation pattern might change or remain the same in dyads, Study 2 was conducted.

Study 2

The potential for partners to influence each other's perceptions of relationship satisfaction is one of the defining characteristics of close relationships (Kelley and Thibaut 1978). In the study of relationships, individuals benefit from having a partner who reports being high on intrinsic goals (partner effect), and from being high on one's own intrinsic goals (actor effect). In other words, both actors' and partners' goal pursuits are expected to contribute to actors' experiences of relationship well-being. Evidence for such mutuality in relationships was found in Deci et al. (2006) and Patrick et al. (2007). Thus, in Study 2, the Actor–Partner Interdependence Model (APIM; Kashy and Kenny 2000) was applied. The current study design enabled the simultaneous estimation of the role of both partners' goals in the experience of relationship well-being.

APIM provides the capacity to directly model the mutual influence that may occur between individuals in a dyadic relationship (Campbell and Kashy 2002). This model accounted for the possibility that people who put more emphasis on extrinsic goals might have had a partner who shared similar values. The APIM also afforded the investigation of possible interaction effects between actors' goals and partners' goals. We were particularly interested in whether there was an interaction effect on particular combinations of couples' goal orientations. There are several possible interaction effects. For example, an extrinsic individual may be more satisfied with an extrinsic partner, because similar values (a match effect) such as goal mutuality or similarity have been shown to promote relationship well-being (Avivi et al. 2009; Fitzsimons and Finkel 2010). In contrast, a mismatch in goals could contribute to poorer relationship well-being. It is also possible that having an intrinsic partner could be more beneficial for extrinsic individuals than for intrinsic individuals (a complementary effect). The current study explored the aforementioned questions. The interaction analyses were exploratory, and no prior hypothesis was made. In addition, perceived conflict was included as an additional relationship quality indicator (on top of relationship satisfaction) to increase the generalizability of our model. Perceived conflict was selected because previous studies suggested that relationship satisfaction could also be measured by relationship adjustment or perceived conflict in a relationship (e.g., Christensen et al. 2004).

In Study 2, participants were recruited from both the USA and Germany to increase the generalizability of the results. However, we did not have a directional hypothesis regarding the effect of the country because of mixed

results from previous studies. The existing literature has demonstrated that the effect and structure of extrinsic goals are similar across the USA and Germany (e.g., Grouzet et al. 2005; Schmuck et al. 2000). However, the association between goal pursuit and happiness could be culturally defined (Ford et al. 2015; Rohrer et al. 2018). For example, Ford et al. (2015) has suggested that East Asian and Russian people's definition of happiness is more socially grounded, whereas it is less so for people in the USA, while individuals from Germany are somewhere in the middle. By including participants from two cultures, the current study would shed light on whether culture moderates the impact of extrinsic versus intrinsic goal pursuits on basic need satisfaction, and/or the mediating role of basic psychological need satisfaction in a relationship. The hypotheses of Study 2 were as follows:

Hypothesis 1a The partner's intrinsic goals would predict higher relationship satisfaction and lower perceived conflict for an actor, while the partner's extrinsic goals would predict lower relationship satisfaction and higher perceived conflict.

Hypothesis 1b Above and beyond the effect of partner goals, the actor's intrinsic goals would predict higher relationship satisfaction and lower perceived conflict, and the actor's extrinsic goals would predict lower relationship satisfaction and higher perceived conflict.

Hypothesis 2a Both partner- and actor-based intrinsic goals would positively predict the actor's basic need satisfaction in the relationship.

Hypothesis 2b Both partner- and actor-based extrinsic goals would negatively predict the actor's basic need satisfaction in the relationship.

Hypothesis 3 The actor's basic psychological need satisfaction would positively predict one's relationship satisfaction and negatively predict perceived conflict.

Hypothesis 4 Basic psychological need satisfaction would mediate the relations among the actor's and partner's extrinsic and intrinsic goals and relationship well-being.

Exploratory hypothesis 5 An interaction effect would exist between the actor's and partner's goal pursuits, and basic need satisfaction and relationship outcomes.

Exploratory hypothesis 6 The country would moderate the effect of goals on basic need satisfaction and the effect of basic need satisfaction on relationship outcomes.

Method

Participants

A total of 104 heterosexual couples aged 18 to 50 ($M_{\text{age}} = 23.05$, $SD = 5.74$) were recruited. Of the participants, 82.7% were Caucasians, 11.1% were Asians, 1% were Black, 1% were Hispanic, and 3.8% were others. The majority of the participants were dating with 7.7% of participants reporting that they were married. Participants had been in their relationship for one month or longer at an average of 35 months ($M_{\text{month}} = 35.46$, $SD = 50.36$).

Procedure

One member of each couple was recruited from the participant pool at the University of [Rochester], USA (45%), or the University of [Hamburg], Germany, (55%), and these participants recruited their romantic partners to participate. Participants from the pool received course credit, whereas partners entered a lottery with a \$50 coupon. Participants confirmed that they were currently in romantic relationships, and informed consent was collected before the commencement of the study. Ethics approval was obtained from both the University of [Rochester] and the University of [Hamburg]. Data were collected online. The members of the dyads completed the questionnaire individually to prevent possible influence by their romantic partners. The questionnaire was identical for both the participants and their partners.

Measures

Basic demographics

Basic demographics such as age, gender and length of relationship were collected.

Extrinsic goals

Six items from Kasser and Ryan's (1996) Aspiration Index were used to measure one's extrinsic goals (sample item: "to one day have many expensive possessions"). Using a 5-point scale ranging from 1 (Not at all) to 5 (Very much), participants rated the extent to which the statements corresponded to the reasons for why they went to work or school. The extrinsic goal index was computed by averaging the responses for the six items ($\alpha = .84$, $M = 2.40$, $SD = 0.83$).

Intrinsic goals

Six items from Kasser and Ryan's (1996) Aspiration Index were used to measure one's intrinsic goals (sample item: "to

help improve my community and society"). Using a 5-point scale ranging from 1 (Not at all) to 5 (Very much), participants rated the extent to which the statements accurately conveyed the reasons for why they went to work or school. The intrinsic goal index was computed by averaging the responses for the six items ($\alpha = .84$, $M = 3.39$, $SD = 0.90$).

Basic psychological need satisfaction in relationships

Participants completed the Basic Need Satisfaction in Relationships Scale (La Guardia et al. 2000). The scale consists of nine items rated 1 (Not at all true) to 7 (Very true). The scale assesses the extent to which participants feel that their romantic partner supports the needs of autonomy, relatedness, and competence (three items for each need). A sample item of the autonomy subscale includes: "when I am with my partner, I feel free to be who I am". A sample item of the relatedness subscale includes: "when I am with my partner, I feel loved and cared about". A sample item of the competence subscale includes: "when I am with my partner, I feel very capable and effective". Subscale scores were calculated by averaging the items of the subscale. An overall need satisfaction score was derived by averaging all nine items. ($\alpha = .90$, $M = 5.88$, $SD = 1.04$ for overall scale).

Relationship satisfaction

Fifteen items of Funk and Rogge's (2007) Couples Satisfaction Index (CSI) were used to assess relationship satisfaction (sample item: "in general how satisfied are you with your relationship?") Participants rated their satisfaction on a 0 (Not at all) to 5 (Completely) scale. Because the CSI has a different point-scale for different items (e.g., some have a 6-point scale, and others have a 5-point scale), the responses were standardized, and a relationship satisfaction score was calculated by averaging the standardized score of each item ($\alpha = .96$, $M = 0.00$, $SD = 0.80$).³

Perceived conflict

A five-item subscale of the Spanier's (1976) Dyadic Adjustment Scale was used to assess perceived conflict. Using a 7-point scale ranging from 1 (All the time) to 7 (Never), participants rated the frequency with which conflicts or thoughts of termination occurred in their relationship. The perceived conflict index was computed by averaging the responses for all the items ($\alpha = .86$, $M = 5.03$, $SD = 1.22$).

³ There are 16 items in the original Funk and Rogge's (2007) Couple Satisfaction Index. However, because of a translation problem, the following item has been dropped: "how you feel about your relationship, Sturdy (5)—Fragile (0)?".

Table 2 Study 2: descriptive statistics of variables by country

	Germany <i>M</i> (<i>SD</i>)	United States <i>M</i> (<i>SD</i>)
Age	25.16 (6.87)	20.46 (1.89)
Length of relationship	50.15 (63.32)	17.65 (13.71)
Relationship satisfaction	.14 (.75)	-.17 (.82)
Perceived conflict	5.42 (1.03)	4.56 (1.27)
Basic psychological need satisfaction	6.05 (.94)	5.67 (1.12)
Intrinsic goals	3.14 (.86)	3.68 (.86)
Extrinsic goals	2.15 (.73)	2.71 (.84)
Relative extrinsic index	-.99 (.93)	-.97 (.95)
<i>N</i>	114	94

A higher score implies fewer conflicts and, hence, indicates higher relationship well-being.

Results

Table 2 provides descriptive statistics by country. Table 3 provides the correlations among all the measured variables separated by gender.

The APIM (Campbell and Kashy 2002; Kashy and Kenny 2000) was used to model the non-independence of dyadic data, given that the data were nested within couples. Multilevel modeling (MLM) and structural equation modeling (SEM) are two possible approaches to analyze dyadic data and both have their strengths and weaknesses (Ledermann and Kenny 2017; Hong and Kim 2018). Hierarchical Linear Modeling (HLM), also known as Multilevel Modeling, has the advantage of capturing the individual and couple level of the data while SEM will treat each dyad as a unit

of analysis. Another advantage is that HLM can be applied with smaller sample sizes. In contrast, SEM requires almost double the sample size because it uses dyads as the level of analysis instead of individuals. Two papers comparing SEM and HLM, both found that SEM and HLM yield very similar results, and both methods could be adopted to analyze the research questions in the current project including the mediation analysis (Kenny et al. 2003; Barnes et al. 2007; Hadden et al. 2015). Therefore, HLM was selected for the current analyses to accommodate the relatively small sample size and to appropriately capture the nested nature of the data in Study 2. Hierarchical linear modeling (HLM) tested whether one’s own goals (actor goals) and one’s partner’s goals (partner goals) uniquely predicted one’s own basic need satisfaction and relationship satisfaction while accounting for the non-independence of the data. In these analyses, an actor effect occurred when one’s own score on goals predicted one’s own score on the criterion (e.g., satisfaction); a partner effect occurred when one’s partner’s score on goals predicted one’s own score on the criterion. HLM was applied (HLMwin 6.08; Raudenbush et al. 2009) with a restricted maximum likelihood estimation to estimate the coefficients. Similar to Study 1, age, relationship length, gender and gender X goals interactions terms were included to control for potential variation between men and women within a couple.

Table 4 provides the coefficients of individual and partner effects of intrinsic and extrinsic goals, predicting the mediators and relationship well-being variables.

Goals and relationship outcomes (hypothesis 1)

As predicted, one’s partner’s intrinsic goals were positively related to one’s own relationship satisfaction and perceived conflict. $\beta = 0.14$, $b = 0.16$, $SE = 0.06$, $t(1,195) = 2.77$,

Table 3 Study 2: correlations among main study variables separately by gender

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Age	–	.81**	–0.17	–.31**	–0.10	0.05	–.24*	–0.19	–0.10	–.20*	–0.05
2. Length of relationship	.68**	–	–0.13	–.27**	–0.09	0.01	–0.15	–0.14	–0.06	–0.11	–0.04
3. Actor intrinsic goals	–.22*	–0.15	–	.45**	–.65**	–.27**	.25*	–0.06	0.16	0.10	0.05
4. Actor extrinsic goals	–0.16	–0.15	.37**	–	.39**	0.08	0.14	.23*	–0.11	–0.10	–0.12
5. Self relative extrinsic goals	0.06	–.002	–.56**	.56**	–	.35**	–0.14	.25*	–.26**	–0.19	–0.15
6. Partner relative extrinsic goals	–0.05	–0.10	–0.14	.25*	.35**	–	–.56**	.56**	–.28**	–.22*	–.25*
7. Partner intrinsic goals	–.24*	–0.13	.25*	–0.06	–.27**	–.65**	–	.37**	0.09	0.16	0.13
8. Partner extrinsic goals	–.34**	–.28**	0.14	.23*	0.08	.39**	.45**	–	–.22*	–0.09	–0.14
9. Basic psychological need	–0.11	–0.13	0.14	–0.11	–.22*	–0.15	0.10	–0.05	–	.81**	.69**
10. Relationship satisfaction	–0.09	–0.10	0.11	–0.02	–0.11	–.20*	0.12	–0.09	.70**	–	.74**
11. Perceived conflict	0.11	0.05	–0.07	–.19*	–0.11	–0.15	0.10	–0.07	.52**	.66**	–

Data for females:presented above the diagonal; data for males:presented below the diagonal

* $p < .05$. ** $p < .01$

Table 4 Study 2: self and partner effects of intrinsic and extrinsic goals as predictors of the mediators and relationship well-being variables

	Goals							
	Self				Partner			
	Intrinsic goals		Extrinsic goals		Intrinsic goals		Extrinsic goals	
	B	SE	B	SE	B	SE	B	SE
Mediators								
BNS	0.20**	.08	-0.24**	.08	0.13	.08	-0.21*	.09
Outcomes								
Relationship satisfaction	0.09	.06	-0.10	.06	0.16**	.06	-.18*	.06
Perceived conflict	0.02	.09	-0.18	.11	0.23*	.10	-.20*	.09

BNS basic need satisfaction

* $p < .05$. ** $p < .01$

$p = .007$ and $\beta = 0.21$, $b = 0.23$, $SE = 0.10$, $t(1,195) = 2.44$, $p = .016$, respectively. The partner's extrinsic goals also were negatively related to one's own relationship satisfaction and perceived conflict, $\beta = -0.14$, $b = -0.18$, $SE = 0.06$, $t(1,195) = -2.92$, $p = .004$ and $\beta = -0.16$, $b = -0.20$, $SE = 0.09$, $t(1,195) = -2.06$, $p = .040$, respectively. The direction of the effect of the actor's own intrinsic and extrinsic goals on one's relationship satisfaction and perceived conflict was as expected, but the effects were not significant (actor's intrinsic goals: for relationship satisfaction, $\beta = 0.08$, $b = 0.09$, $SE = 0.06$, $t(1,195) = 1.51$, $p = .132$, and, for perceived conflict, $\beta = 0.02$, $b = 0.02$, $SE = 0.09$, $t(1,195) = 0.23$, $p = .823$; and actor's extrinsic goals: for relationship satisfaction, $\beta = -0.08$, $b = -0.10$, $SE = 0.06$, $t(1,195) = -1.49$, $p = .138$, and, for perceived conflict, $\beta = -0.15$, $b = -0.18$, $SE = 0.11$, $t(1,195) = -1.68$, $p = .093$). Gender and the gender X goal interactions were not a significant predictor, ($ps > .05$). The results suggested that having a partner who was high on intrinsic goals was associated with one's own higher relationship satisfaction. In contrast, having a partner who was high on extrinsic goals was associated with one's own lower relationship satisfaction. These effects controlled for one's own intrinsic and extrinsic goals, age, relationship length, gender, and gender X goal interactions.

Goals and basic need satisfaction (hypothesis 2)

Regarding basic need satisfaction in a relationship, both actors' and partners' extrinsic goals were negative predictors of basic need satisfaction: $\beta = -0.20$, $b = -0.24$, $SE = 0.08$, $t(1,195) = -2.79$, $p = .006$ and, $\beta = -0.18$, $b = -0.21$, $SE = 0.09$, $t(1,195) = -2.46$, $p = .015$, respectively. In contrast, actors' intrinsic goals was a positive predictor of basic need satisfaction, $\beta = 0.18$, $b = 0.20$, $SE = 0.08$, $t(1,195) = 2.66$, $p = .009$ and, partner's intrinsic goals was not a significant predictor of basic need satisfaction, $\beta = .11$, $b = 0.13$, $SE = 0.08$, $t(1,195) = 1.61$, $p = .109$. These results partially supported hypothesis 2 that there was a tendency

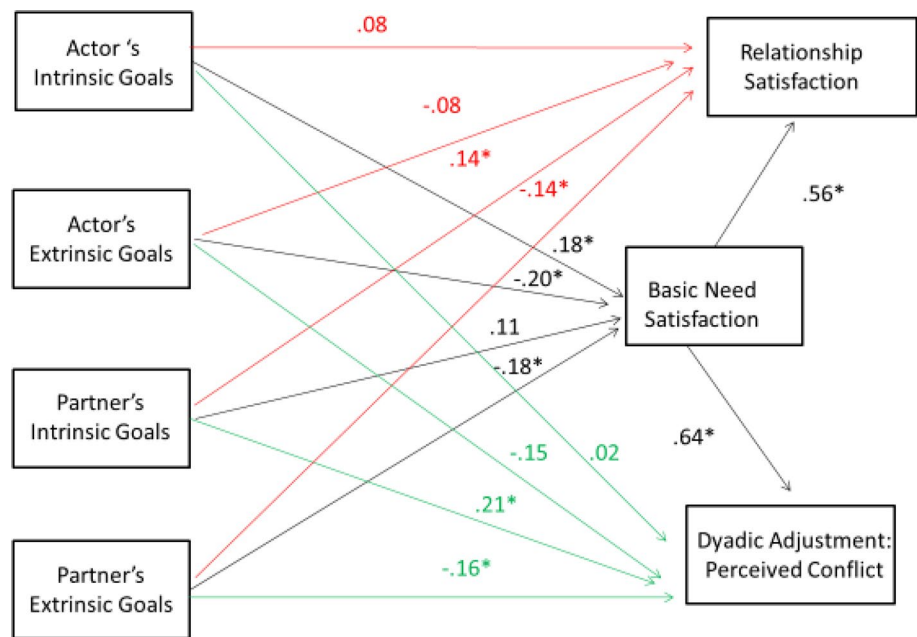
that both an actor's and partner's intrinsic and extrinsic goals are related to one's basic need satisfaction in the relationship. In particular, people who were high on intrinsic goals experienced higher basic psychological need satisfaction. However, people who were high on extrinsic goals or those whose partners were high on extrinsic goals experienced lower basic psychological need satisfaction.

Pursuit of goals and relationship well-being through basic need satisfaction (hypotheses 3 and 4)

To test the hypothesis on the association between the pursuit of goals and relationship well-being (hypothesis 3) as well as the hypothesis that basic need satisfaction mediates the association (hypothesis 4), we used the method recommended by MacKinnon et al. (2002) and utilized in other dyadic research (e.g., Barnes et al. 2007). MacKinnon et al. (2002) utilized Monte Carlo statistical simulations to compare the accuracy and statistical power of different methods of mediation analysis. The method that was proposed by the paper was used in the current analysis. The method involves converting each coefficient in an indirect (mediated) effect to z scores by dividing the coefficient by its standard error, then multiplying the z s or $z_\alpha z_\beta$ and comparing this value (labeled a P statistic) to critical values in the sampling distribution of the product of two random variables (obtained from MacKinnon et al. 2002).

As shown in Fig. 2, the results showed that individuals' own intrinsic pursuits and their partners' intrinsic and extrinsic pursuits were generally significantly related to basic need satisfaction, with the exception of partner intrinsic goals. Basic need satisfaction was a significant predictor of relationship satisfaction and perceived conflicts, $\beta = 0.56$, $b = 0.53$, $SE = 0.05$, $t(1,194) = 10.06$, $p < .001$ and, $\beta = 0.64$, $b = 0.61$, $SE = 0.09$, $t(1,194) = 6.80$, $p < .001$, respectively. In addition, basic need satisfaction significantly mediated the pathway between actors' intrinsic goals and relationship

Fig. 2 Study 2—self and partner’s intrinsic and extrinsic goals predict relationship satisfaction and dyadic adjustment via basic need satisfaction. Values are standardized estimates. * = $p < .05$



well-being (relationship satisfaction: $z = 26.75, p < .001$; perceived conflict: $z = 18.07, p < .001$), the pathway between actors’ extrinsic goals and relationship well-being (satisfaction: $z = -28.11, p < .001$; perceived conflict: $z = -18.99, p < .001$), the pathway between partner intrinsic goals and relationship well-being (satisfaction: $z = 16.19, p < .001$; perceived conflict: $z = 10.94, p < .001$), and the pathway between partner extrinsic goals and relationship well-being (satisfaction: $z = -24.79, p < .001$; perceived conflict: $z = -16.75, p < .001$). Thus, it appears that both one’s own and one’s partner’s goals have an indirect effect on relationship well-being through basic need satisfaction in a relationship.

Actors’ and partners’ goals interaction effects (hypothesis 5)

To test for possible interaction effects between one’s own goals and a partner’s goals, dyadic response surface analysis (DRSA) was applied (Barranti et al. 2017; Schönbrodt et al. 2018). The DRSA is an approach that test for (mis) match effects while avoiding the statistical limitations of conventional approaches (Barranti et al. 2017). A relative extrinsic goal index was created for both actors and partners, as DRSA would only allow the simultaneous examination of the mis(match) effect of two variables. The relative extrinsic goal index was created by subtracting intrinsic goal scores from extrinsic goal scores. A positive score on this index reflected a stronger focus on extrinsic goals as compared to intrinsic goals. Using the relative extrinsic goal index or having intrinsic and extrinsic goals as simultaneous predictors are both acceptable methods in the research on extrinsic goal

pursuits (e.g., Kasser and Ryan 2001). The DRSA produces 4 coefficients to answer the following four questions: coefficient a_1 shows whether matches at high values have different outcomes than matches at low values; coefficient a_2 indicates whether matches at extreme values have different outcomes than matches at less extreme values; coefficient a_3 indicates whether one mismatch (Actor > Partner) is better or worse than the other (Actor < Partner); and coefficient a_4 indicates whether matches are better or worse than mismatches. Table 5 summarizes the results of the DRSA. Overall, there was no significant mis(match) effect (all $ps > .20$).

Country moderation effect (hypothesis 6)

To analyze whether a country or culture would moderate the effect of actors’ or partners’ goals on basic need satisfaction or the effect of basic need satisfaction on relationship outcomes, country (coded as -1 = Germany, 1 = USA) was added to the level-2 model in the hierarchical linear model to test for possible interaction effects. The country intercept was significant ($\beta = -0.29, b = -.30, t(101) = -3.10, p = .003$), suggesting that participants in the USA had a lower baseline basic need satisfaction. The association between actors’ and partners’ intrinsic goal pursuits and basic need satisfaction was, $\beta = .22, b = .24, SE = .06, t(186) = 3.76, p < .001$ and $\beta = .12, b = .15, SE = .07, t(186) = 2.34, p = .02$, respectively. This main effect was qualified by a country interaction such that participants from the USA benefited more from actors’ and partners’ intrinsic goals, $\beta = .24, b = .28, SE = .06, t(186) = 4.32, p < .001$ and $\beta = .18, b = .22, SE = .07, t(186) = 3.194, p = .002$, respectively. In other words, participants from the USA had a

Table 5 Study 2: response surface parameters indicating effects of actor-partner combination on basic need satisfaction and relationship outcomes

Parameter	Coefficient (SE)	t-value	<i>p</i>
Basic need satisfaction			
a1 (linear effect of congruence)	−.48 (.43)	−1.10	.27
a2 (curvilinear effect of congruence)	.03 (.11)	.25	.80
a3 (linear effect of incongruence)	−.06 (.21)	−.30	.77
a4 (curvilinear effect of incongruence)	−.07 (.23)	−.32	.75
Relationship satisfaction			
a1 (linear effect of congruence)	−.26 (.34)	−.79	.43
a2 (curvilinear effect of congruence)	.009 (.08)	−.10	.92
a3 (linear effect of incongruence)	−.21 (.16)	−1.29	.20
a4 (curvilinear effect of incongruence)	−.13 (.18)	−.71	.48
Perceived conflict			
a1 (linear effect of congruence)	−.38 (.51)	−.75	.45
a2 (curvilinear effect of congruence)	.02 (.13)	.13	.90
a3 (linear effect of incongruence)	−.18 (.27)	−.67	.51
a4 (curvilinear effect of incongruence)	−.11 (.27)	−.41	.68

lower basic need satisfaction to start with compared with those from Germany. The actor's or partner's intrinsic goal pursuits were associated with higher basic need satisfaction for all participants but this positive effect was stronger for USA participants than for Germany participants. Basic need satisfaction was associated with relationship satisfaction and perceived conflict: $\beta = 0.54$, $b = .52$, $SE = .04$, $t(184) = 12.03$, $p < .001$ and $\beta = .48$, $b = .57$, $SE = .09$, $t(184) = 6.56$, $p < .001$, respectively. However, this main effect was also qualified by a country interaction such that the impact of basic need satisfaction on the two relationship outcomes (relationship satisfaction: $\beta = -0.08$, $b = -.08$, $SE = .04$, $t(184) = -1.792$, $p = .074$ and perceived conflict: $\beta = -0.16$, $b = -.20$, $SE = .09$, $t(184) = -2.22$, $p = .028$) was weaker for USA participants.

Summary of study 2

Findings from Study 2 demonstrated that partners' extrinsic goals had an impact on relationship well-being, and this association was mediated by basic need satisfaction. This is among the first studies to consider both actors' and partners' intrinsic/extrinsic goal orientations, and in which basic need satisfaction and relationship satisfaction were also considered. There was no support for the interaction effect from the DRSA. As such, the detrimental effects of extrinsic goals were the same, regardless of one's own or one's partner's level of extrinsic goals. For an actor high on extrinsic goals, having a partner high on extrinsic goals did

not alleviate or exacerbate the negative impact of the actor's extrinsic goals on the actor's experience of the relationship. Last, actors' and partners' intrinsic goals had a more positive impact on actors' basic need satisfaction in the USA, and the role of basic need satisfaction on relationship outcomes was stronger for participants in Germany.

Discussion

The present research examined how the pursuit of intrinsic versus extrinsic goals predicted relationship quality of romantic relationships. In general, intrinsic goals are positive for relationship quality, while extrinsic goals are negative. Since previous research mainly focused on self-reports of one's own goals, the current project included partners' goals as well. In Study 1, perceived partners' extrinsic goals were negatively associated with actors' relationship satisfaction. In other words, individuals who perceive their partners as having a strong focus on extrinsic desires were more likely to be less satisfied with their relationships. In Study 2, using data from both sides of a dyad, the actor's and partner's extrinsic goal pursuits were shown to independently associate with relationship satisfaction and perceived conflict with the partner. In other words, similar to previous studies (Kasser and Ryan 2001), people with high extrinsic goals reported lower satisfaction with their relationships and more conflicts with their partners.

The current research has increased our earlier understanding of extrinsic goal pursuits by employing both self-reporting and dyadic data. It extended our understanding of extrinsic goal pursuits as negatively related to basic psychological need satisfaction and romantic relationship quality. It also provided a theoretical framework by connecting the three mini-theories of SDT and empirical evidence regarding how the pursuit of extrinsic goals is negative for romantic relationships as mediated by basic psychological need satisfaction in a relationship.

People influence each other in relationships (Kelley and Thibaut 1978). It is important to investigate one's own goals and the partner's goals to obtain a full picture of the dynamics in romantic couples. While previous research has shown that people who place high importance on extrinsic goals have a lower relationship well-being (Kasser et al. 2004), the current study showed that the goals of both actors and partners uniquely predicted relational outcomes. Combining results from both studies, both perceived partners' goals and the actual self-report of partners' goals showed a convergent effect. In short, the partner's extrinsic goals were negative for the relationship's well-being. At the same time, actor's extrinsic goals were also negative for romantic relationships, and its effects were independent of partners' goal pursuits.

Differential and unique effects were found for extrinsic and intrinsic goals across both studies. In Study 1, the higher were the partners' extrinsic pursuits, the lower were the basic psychological need satisfaction and subsequent relationship satisfaction in the relationship, and vice versa. In Study 2, the actor's intrinsic goal pursuits positively predicted romantic relationships, while both the partner's extrinsic and actor's extrinsic goal pursuits negatively predicted romantic relationships. The two studies provided strong evidence pointing to the conclusion that both individual's and partner's extrinsic goals were bad for romantic relationships, while intrinsic goals were positive for romantic relationships.

Basic need satisfaction in a relationship was the mediator between goals and relationship outcomes in both studies. While the mediating (intervening) role of basic psychological need satisfaction between extrinsic goals and well-being outcomes has been tested in the work domain (Vansteenkiste et al. 2006; Niemiec et al. 2009), the two present studies replicated the findings, and were among the first to demonstrate the mediating role of basic psychological needs in the relationship domain. This also provides us with a theoretical understanding of why one's extrinsic goals and those of the partner are negatively related to close relationships.

Having similar goals might enhance relationship satisfaction because partners might see each other as similar (Gaunt 2006), and they might know how to support each other's pursuit of goals (Righetti et al. 2011). Nevertheless, if both partners are extrinsic-oriented, this could further exacerbate the harmful effects of extrinsic goal pursuits, as both partners are poor providers of basic psychological need satisfaction. Therefore, Study 2 tested the effects of how a match or mismatch of goals would moderate the relations between extrinsic goals and relationship quality. The results showed that pursuing extrinsic goals is negative to both individuals within a couple regardless of whether or not these goals are shared. There was no evidence of a match effect of extrinsic individuals and extrinsic partners. This adds to the self-determination theory literature of the omnibus detrimental effects of extrinsic goals pursuit.

An interesting future avenue for research is to test how partners with different life goals influence each other as their relationship progresses. Rusbult et al. (2009) proposed the Michelangelo's phenomenon, which explains how dyads in a relationship may shape each other's goals. Close partners sculpt one another's selves, shaping one another's skills and traits and promoting one another's pursuit of goals. As a result of the way that partners perceive and behave toward one another, each person might enjoy greater or lesser success in attaining his or her ideal-self goals. If ideal-self goals were attained, the relationship would be strengthened. Given that, the question remains as to how supporting a partner's extrinsic or intrinsic goals pursuits might predict relationship

quality. We suspect that the interactions of extrinsic individuals and partners can result in a negative synergistic effect or a downward spiral effect because of its undermining effects on basic need satisfaction in a relationship. We suggest that more future research could be performed to understand such interaction effects.

Last but not least, in view of the likely cultural differences, in Study 2, we examined the moderating role of culture to fill the gap in the existing literature. It was found that at the baseline level, participants from the USA had a much lower basic psychological need satisfaction to start with compared to their German counterparts, so as intrinsic goal pursuits increased, their value in increasing individuals' basic psychological need satisfaction became more salient. This is similar to having a welcome rain after a prolonged spell of drought. In contrast, as the participants from Germany had a higher basic need satisfaction to start with, the increment in basic need satisfaction was less salient when the intrinsic goal increased. In addition, the impact of basic need satisfaction on relationship outcomes was stronger for German participants than for USA participants. The differences in the educational system across the two countries may explain part of the variances as on why German participants had a higher basic need satisfaction to start with and as to how basic need satisfaction might have a stronger impact on them. In Levesque et al. (2004), the authors suggested that the German education system emphasizes self-learning and autonomy, and they found that students from Germany feel more autonomous compared with their USA counterparts. As a matter of fact, findings from previous literature were mixed on the effects of culture on the association of goals and well-being, or basic psychological needs and well-being; some studies have found none or minimal cultural differences, while others have found salient cultural differences (for review, see Church et al. 2013). Therefore, more research is needed to draw solid conclusions on the mechanisms behind such cultural differences.

Limitations

There are a few limitations of the current research. First, although the data were collected from a diverse sample, most participants were Caucasians, who lived in more financially and politically stable countries. The results from the current studies may not be generalizable to other groups of people from politically or financially unstable nations. As suggested by Brdar et al. (2009), in developing countries, striving for money and power carries survival implications rather than solely extrinsic motivations. Therefore, replication studies in communities that are less secure and affluent will be essential for understanding the universality of the effects being studied.

Second, although dyadic data were included in Study 2, both Studies 1 and 2 still relied on self-reporting data. Reliance on self-reports is a common problem in the study of social psychology (Baumeister et al. 2007). In addition, although a mediation model was applied in both studies, our results could not infer causality. Mediation analysis can only support that an association exists and that one mediation pattern is more plausible than another. Hence, ideally, experimental studies have to be conducted to establish causality (Shrout and Bolger 2002). Therefore, future research can employ multiple methods to test the current model; for example, behavioral observation data on need-provision, and implicit assessment of relationship satisfaction (Lee et al. 2010) could be employed. We also suggest that other dimensions of goals that may affect relationship well-being can also be considered. For instance, according to the circumplex model (Schwartz 1992; Grouzet et al. 2005), another continuum of goals would be the self-transcendent (e.g., spiritualism) and physical self (e.g., hedonism) continuum, which could be included in future studies.

Last, the sample size of the current two studies was modest. The sample size of the two studies would be able to detect a small ($f^2 = .02$) to medium ($f^2 = .15$) effect size (GPower 3, Faul et al. 2007; Barranti et al. 2017). However, a larger sample size might be needed to detect interaction effects, such as a (mis)match analysis of the actor-partner effect and gender interaction that we examined in the study.

Despite its limitations, the present work has important theoretical and practical implications. Theoretically, this research is one of the few attempts to examine how personal motivation orientation can enhance or negatively interfere with interpersonal relationships (La Guardia and Patrick 2008). This study also adds to the literature on the motivational underpinnings of relationship processes and illustrates how need provision plays a central role in relationship processes and outcomes. It also contributes data to the literature that pertains to the incompatibility of pursuing extrinsic goals and building meaningful relationships. The results suggest important implications for therapeutic contexts to increase couples' relationship well-being. The current results suggest that personal goals and basic need satisfaction in a relationship are both important factors for more positive relationship well-being. The findings imply that for interventions that aim to enhance relationship satisfaction, addressing personal goals and basic need satisfaction might be effective. Strategies such as adopting intrinsic goals, reflecting on the connection between extrinsic goal pursuit and lower basic need satisfaction, and providing possibilities for the pursuit of goals that are more inherently need-satisfying could be applied in interventions that aim to build relationship satisfaction. Finally, in most developed countries, capitalistic cultures often prioritize values that focus on self-interest and competition (Kasser et al. 2007). If

policy makers would like to create a more caring and harmonious society that enhances people's relationship well-being, they must de-emphasize extrinsically aimed activities and emphasize intrinsic interests in the society. Policies should be implemented to include educational curriculum that puts less weight on money-maximization and competition and offers more guidance regarding self-acceptance, community service, and competence development. Young children and adolescents should be encouraged to develop interests and engage in the community rather than those that are related to money-making.

Closing remarks

To conclude, the current study focuses on the dimension between intrinsic and extrinsic goals and how they predict basic need satisfaction and relationship well-being. An understanding of the pursuit of intrinsic and extrinsic goals, the integration of these findings and ideas with other theories and ideologies, and the ramifications of these pursuits may readily lead to new discoveries concerning behavior and human nature.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethics approval Ethics approval was obtained from the ethics committee of The University of Rochester and University of Hamburg.

Informed consent were distributed to participants prior to their participation.

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