



Revisiting Adult Playfulness and Relationship Satisfaction: APIM Analyses of Middle-Aged and Older Couples

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Accepted: 17 August 2021
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Abstract

There is robust support for the notion that playfulness is important for how people initiate and engage in their romantic relationships. Our study sought to extend the knowledge on associations between four facets of playfulness (Other-directed, Lighthearted, Intellectual, and Whimsical; OLIW) with facets of relationship satisfaction (RS) in 116 middle-to-older age couples (median = 54 and 57 years in women and men). In comparison to younger samples, we found lower expressions in Other-directed playfulness. Using Actor-Partner Interdependence Modelling, we found that (a) older couples showed comparatively higher similarity in the single OLIW facets and their profiles than previously found in younger couples; (b) similarity is again unrelated to RS; and (c) findings on playfulness-RS associations partially replicated, with Other-directed and Whimsical playfulness showing the numerically strongest actor and partner effects, but mainly in women. We discuss the differences in similarity with regard to an attrition effect. Overall, we conclude that playfulness is important in older couples in similar ways as in younger couples.

Keywords Adult Playfulness · Actor-Partner Interdependence Model · Similarity · Relationship Satisfaction · OLIW

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A famous quote attributed to George Bernard Shaw is: “We don’t stop playing because we grow old; we grow old because we stop playing.” The positive psychology movement may have legs to encourage more research on playfulness in older people and test whether having a playful disposition may contribute towards aging well (e.g., by having a fulfilling romantic relationship; see e.g., Killen & Macaskill, 2020). Positive Psychology views close relationships as an institution that contributes to well-being, and people desire to initiate and maintain long-term partnerships (e.g., Peterson & Csikszentmihalyi, 2014); also, “Positive Relationships” is one of the core tenets of Seligman’s (2011) well-being theory (“PERMA”-model). Prior research has shown that individual differences in playfulness contribute to understand how people initiate, facilitate, and maintain close relationships (Brauer et al., 2021b). Proyer, Brauer, Wolf, and Chick (hereafter abbreviated PBWC; 2019a) found that playfulness is positively associated with relationship satisfaction (RS) in couples. However, the generalizability of their findings is limited as they mostly studied couples of younger ages and we are not aware of empirical research on the role of playfulness for the romantic well-being in older couples. Furthermore, it is yet unknown whether older birds of a playful feather still flock together, that is, whether older-aged partners are similar in their playfulness and if their similarity might relate to RS. Despite the growing interest in adult playfulness (see Bittermann et al., 2021¹) only few studies examined playfulness in middle and older age (Proyer, 2014b; Yarnal & Qian, 2011). Since findings about RS and playfulness from younger couples do not necessarily generalize to older couples (Latagne & Furman, 2017), we sought to narrow this gap in the literature by testing the associations between playfulness and RS in a sample of middle-to-older age couples using Actor-Partner Interdependence Model (APIM; Cook & Kenny, 2005) analyses. Comparing our findings from older couples with those from PBWC contributes to extending the knowledge on playfulness in relationships across the life span and may encourage further research on how couples across all age groups could capitalize on playfulness for increasing their well-being in relationships.

1 Adult Playfulness

Adult playfulness is “an individual differences variable that allows people to frame or reframe everyday situations in a way such that they experience them as entertaining, and/or intellectually stimulating, and/or personally interesting.” (Proyer, 2017, p. 114). As such it relates to the actual behavior of play² and playfulness can be seen as a disposition to play and engage in play-behaviors. In this study we focus on

¹ Their recent analysis of Twitter posts shows that playfulness has emerged as a “hot research topic” among psychologists.

² A universally accepted definition of play in humans and animals is still missing, but one frequently referred to definition is: “Play is repeated, incompletely functional behavior differing from more serious versions structurally, contextually, or ontogenetically, and initiated voluntarily when the animal is in a relaxed or low-stress setting” (Burghardt, 2005; p. 82).

playfulness as a personality trait but will also refer to research on play for deriving our expectations acknowledging that play helps with and facilitates the adaptation to environmental changes and finding innovative ways of dealing with situations (cf. Bateson & Martin, 2013)—also such type of situations that are of importance when being in a relationship.

Proyer (2017) introduced the OLIW-model, a multi-dimensional structural model of adult playfulness. OLIW is the acronym of its four facets *Other-directed* (i.e., using playfulness in social situations to solve tension), *Lighthearted* (i.e., a spontaneous view of life without thinking much of consequences of the behavior; liking improvising over planning), *Intellectual* (i.e., enjoying play with new ideas and come up with new solutions for intellectual problems), and *Whimsical* playfulness (i.e., preferring odd or extraordinary things or people; Proyer, 2017). When testing their overlap with broad personality traits such as the Big Five, there is the expected overlap but no redundancy (e.g., Proyer, 2012, 2017). Studies using the OLIW model have shown the differential associations between the four facets with numerous outcomes such as subjective well-being, mental and physical health (e.g., Farley et al., 2021; Proyer, 2014b; Proyer et al., 2018b, 2020), sensation seeking (Brauer et al., 2021b), and creative thinking styles (e.g., Proyer et al., 2019b) to name but a few.

Playfulness has also received attention in the positive psychology movement.³ For example, Peterson and Seligman (2004) list playfulness as a synonym of *humor* in their classification of strengths and virtues (Values-in-Action classification, VIA). There, humor/playfulness is seen as a strength of character, a morally positively valued trait (for a more in-depth analysis of the association between humor and playfulness in terms of the VIA-classification see Proyer & Ruch, 2011 and for a discussion of the overlap between humor and playfulness see Proyer, 2018). It has been argued that play and being playful are associated with the elicitation of positive emotions. Fredrickson (2001) proposes the *Broaden-and-Build Theory* of positive emotions. She argues that the experience of positive emotions broadens an individuals' action and thought repertoire, while negative emotions would have the opposite effect. This broadening component then facilitates the development of new resources in an individual (e.g., by learning a new way of solving a given problem). This would create a positive upward spiral that increases the likelihood of experiencing positive emotions. Numerous studies provided empirical support for her basic assumptions (for an overview see Fredrickson, 2004). This theory is of particular interest for research in play and playfulness since Fredrickson makes direct references to playfulness. For example, she argues:

³ It should be mentioned that the idea that playfulness contributes to well-being is also considerably older. For example, Fowler (1847) notes in her treatise on *mirthfulness*—of which playfulness is one part: “Learn to be cheerful, lively, animated, and mirthful; you will enjoy better health than if you are always sober and sedate. A bow is stronger for being sometimes unbent; so the muscles are stronger for being often relaxed, and the mind is more active and vigorous when we indulge in innocent recreation” (p. 134).

“[...] joy and playfulness build a variety of resources. Consider children at play in the schoolyard or adults enjoying a game of basketball in the gym. Although their immediate motivations may be simply hedonistic—to enjoy the moment—they are at the same time building physical, intellectual, psychological and social resources. The physical activity leads to long term improvements in health, the game-playing strategies develop problem-solving skills, and the camaraderie strengthens social bonds that may provide crucial support at some time in the future [...]. Similar links between playfulness and later gains in physical, social and intellectual resources are also evident in nonhuman animals, such as monkeys, rats and squirrels” (Fredrickson, 2003; p. 333).

She further describes the relation between joy and play: “Joy, for example, encourages playful behavior. These broadened thought-action repertoires in turn build intellectual, physical, social and psychological resources for the future. Such resources translate into greater odds of survival and reproductive success” (Fredrickson, 2003; p. 333). Hence, playfulness and play have important functions in building and maintaining resources in a broad range of areas; for example, physical, social, or intellectual (Fredrickson, 1998).

2 A Brief Overview on Playfulness in Romantic Life

There is robust empirical and theoretical evidence that playfulness is important for domains of romantic life (for an overview see Brauer et al., 2021b). For example, when laypeople are asked about the functions of playfulness in everyday life, they report that it contributes to their relationships (e.g., “to cultivate relationships,” “to show affection,” and “to mediate disputes;” Proyer, 2014a). Baxter (1992) concluded that playful interactions contribute to promote intimacy and reducing conflict, and that playfulness provides a safe communication strategy (sharing emotional attachment), a “creative outlet for individual expression [...] to celebrate their individual qualities while simultaneously embedded in an interdependent relationship” (p. 337) and ways to enhance communication for finding joint meaning. Also, Metz and Lutz (1990) highlighted the role of (intimate) play in contributing to the satisfaction of basic needs such as trust or acceptance but also joy. Aune and Wong (2002) argued that playfulness reduces interpersonal tension and enhances communication and, therefore, leads to more positive experiences in romantic relationships. Studies support this notion when examining associations between playfulness and variables such as RS, love styles, inclinations to interpersonal character strengths, sexual preferences, and sexual sensation seeking (e.g., Aune & Wong, 2002; Bem & Paasonen, 2021; Brasini et al., 2020; Brauer et al., 2021a, b; Chick et al., 2020; Farley et al., 2021; Proyer & Ruch, 2011; Proyer et al., 2018a, 2019a; Turley et al., 2017).

Playfulness has also received attention regarding narrow domains of romantic relationships. For example, Metz and McCarty (2007) proposed that playfulness contributes to sexual satisfaction and intimacy in romantic relationships. They suggest that being playful is a consequence of the partner’s “trust, mutual acceptance, priority of pleasure, freedom to be oneself, and deep valuing of the relationships”

(Metz & McCarty, 2007; p. 360), and, therefore, supports openness toward the partner and allows reframing couples' sexual life (e.g., trying new ways to engage in their sexuality). Initial findings support this notion, as recent studies have shown that playfulness relates to both partner's sexual satisfaction, inclinations to try out non-mainstream sexual practices such as bondage, discipline, dominance and submission, sadomasochism (BDSM), and sexual sensation seeking (e.g., Brauer et al., 2021a, b; Proyer et al., 2019a; Proyer, 2014c; Turley et al., 2017).

Signal Theory of Play and Partner Similarity According to Chick's (2001) *Signal Theory of Play*, playfulness might have an evolutionary function in initiating relationships by signaling underlying qualities that are considered in human mating. He suggested that playfulness in women represents youth, health, and, therefore, fecundity. Playful men signal non-aggressiveness and therefore a lower chance of harm for both the partner and children. Thus, playfulness might be one criterion of mate choice and therefore leads to sexual selection. To examine this notion, Chick et al. (2012) asked 254 university students to rate 16 characteristics, among them playfulness, concerning their desirability in partners. Playfulness was overall rated in fifth place, but fourth as a trait that women desire in men. Proyer and Wagner (2015) replicated these findings in German-speaking participants and additionally found that people in romantic relationships were more playful than singles ($d=0.25$). Also, Chick et al. (2020) extended this research by examining the overlap between self-ratings and those regarding *ideal* prospective long-term mates, using the same list of trait descriptors. First, "being playful" was again found to be a highly desired trait. Secondly, men and women did not differ, on average, in placing importance to playfulness in a prospective partner ($d=0.07$). Thirdly, they found positive correlations between self- and ideal partner ratings regarding "being playful" ($r=0.32$ in the total sample; women/men: $r=0.19/0.39$). This indicates that the levels of playfulness correspond with the desire to have an equally playful partner. Additional support for this theory can be found in studies showing that people can accurately judge the playfulness of others, even at zero-acquaintance (e.g., Proyer, 2017; Proyer & Brauer, 2018). Further, de Moraes et al. (2021) found a positive relation between Other-directed and Whimsical playfulness and the number of long-term and short-term relationships in men and women alike, explaining up to 10% of the variance. They argue that this might support the notion that those high in playfulness are desirable partners in line with Chick's (2001) Signal Theory. Overall, these findings support the notion that people seem to seek and prefer a partner who is characterized by playfulness and that there are assortative preferences.

The Signal Theory of Play and findings on playfulness being a desired trait in partners (e.g., Chick, 2001; Chick et al., 2012, 2020; Proyer & Wagner, 2015) suggest that people might have assortative mating preferences concerning playfulness. Initial findings by Olson et al. (2001) supported this notion when showing genotypic similarity for playfulness in monozygotic and dizygotic twins. For couples, PBWC (2018a, 2019a) tested the partner similarity for the OLIW facets and profiles. Using data of 77 and 211 opposite-sex couples, they found robust

trait wise similarity for Other-directed ($r_s=0.22$ and 0.29) and Whimsical types of playfulness ($r_s=0.47$ and 0.21), whereas similarity in Intellectual playfulness was numerically lower ($r=0.16$ and 0.08). For Lighthearted playfulness they found a small effect of complementarity ($r=-0.16$ and -0.10). Further, PBWC (2019a) examined the partner similarity across the full *profiles* of the OLIW facets. They found that partners tend to be similar in the four facets overall ($r=0.55$; i.e., raw profile similarity), but coefficients decreased when controlling for stereotype effects ($r=0.12$; i.e., distinctive profile similarity). Thus, initial evidence points into the direction that robust partner similarity exists for Other-directed and Whimsical types, and that partners partially overlap when considering their full profiles of the OLIW facets.

In addition to describing partner similarity, PBWC (2019a) tested whether similarity in playfulness is associated with RS. The literature suggests that partner similarity in broad and narrow personality traits relates to convergences regarding how partners perceive their environment. Such agreement in perceptions and behaviors is expected to reduce conflict in relationships and, thus, contributes to RS and longevity of the relationship (e.g., Luo, 2017; Luo & Klohnen, 2005; Rammstedt & Schupp, 2008; Rammstedt et al., 2013). PBWC found no evidence that similarity in either single facets or profiles of playfulness substantially relates to RS. While replication of these findings is pending, current knowledge shows that although partners tend to be similar in their playfulness, this has no robust effects on their satisfaction. Extension of findings on similarity to couples of middle and older age is desirable since it has been shown that similarity is a negative predictor of relationship dissolution and that “only the congruent survive” (i.e., stay together) over time (Rammstedt & Schupp, 2008; Rammstedt et al., 2013). Taking these findings into account, we expected that similarity in the OLIW facets might be higher when testing older-aged couples in comparison to PBWC’s comparatively younger sample. We base our expectation on the rationale that a sample of older-aged long-term couples have “survived” those couples that ended their relationships during earlier phases of the relationships and that such a sample of long-term couples would be characterized by greater similarity.

Relationship Satisfaction RS is the most frequently studied outcome in relationship research and describes one’s evaluation of the romantic relationship (Siffert & Bodenmann, 2010). It predicts the longevity of relationships and typically used questionnaires cover both, a global evaluation, but also facets of RS such as sexuality, mistrust, or future orientations (e.g., Kliem et al., 2012; Siffert & Bodenmann, 2010).

In addition to the previously discussed notions on the merits of playfulness in close relationships, Fredrickson’s (2001) aforementioned *Broaden-and-Build Theory* provides a framework on why playfulness relates to RS. There, being playful is suggested to lead to positive emotions that support building and strengthening social relationships, and thereby, increase RS. While early findings (e.g., Betcher, 1981) showed that playfulness goes along with marital quality, Aune and Wong

(2002) tested Fredrickson's assumption in a path model and found support for the hypothesis that playfulness positively relates to RS through the experience of positive emotions. Also, Proyer (2014c) found positive associations between playfulness and RS in two independent samples. Aggregating Aune and Wong's and Proyer's findings gives a meta-analytical correlation between global measures of playfulness and RS of $r=0.32$ ($N_{\text{total}}=828$), thus, supporting the notion that playfulness relates to RS.

While prior research was based on data from individuals only, PBWC (2019a) tested the association between playfulness and RS by using data from 211 opposite-sex couples who completed the OLIW questionnaire and multi-dimensional measures of RS. This allows a more fine-grained analysis of the associations and modeling of the interdependence between partners' playfulness and RS respectively by taking within- (actor effects) and between partner associations (partner effects) into account. Using *Actor-Partner Interdependence Model* (APIM; Cook & Kenny, 2005) analyses, PBWC found robust positive actor effects for Other-directed playfulness on global RS and its facets of fascination toward the partner, Engagement, Sexuality, Future orientation, Togetherness, Tenderness, and overall happiness with the relationship. In terms of the partner effects, Other-directed playfulness depended on gender, as only women's Other-directed playfulness was positively related to their partner's sexual satisfaction. Lighthearted Playfulness was independent from RS, except for positive inclinations to Fascination (actor effect) and that it related to greater mistrust in their partner (partner effect). For Intellectual playfulness, actor effects were positively related to global RS as well as the facets fascination, sexual satisfaction, and engagement, and the partner's mistrust (partner effect). Finally, Whimsical playfulness related positively to the facets Fascination and engagement in actors but did not show partner effects. While these findings lend further evidence to the notion that playfulness relates positively to RS in actors, and in some cases their partners, no study has yet replicated these findings. Moreover, a limitation of PBWC's study is that they only tested comparatively young participants with mean ages of 25.9 (women) and 28.3 years (men), who were together for 5.1 years ($SD=7.1$). We sought to extend the replication of PBWC's findings toward middle-aged and older couples.

3 Adult Playfulness and Age

There is only limited research on adult playfulness in middle and old age. When assessing playfulness as a character strength, studies indicate no robust variations across age (Baumann et al., 2020). Proyer et al. (2010) assessed playfulness by means of McGhee's (1979) notion of playfulness as a facet of the sense of humor and found no relationships with age in 979 participants between the ages of 18 and 72 years. Further, they found that playfulness was positively associated with indicators of well-being (e.g., satisfaction with one's relationships) independently of age. Proyer (2014b) conducted an initial study of trait-playfulness (i.e., an easy onset and frequent display of playful behaviors) across the life span using data from 4,100 German-speaking participants, aged 18 to 92 years ($M=45.4$, $SD=12.0$).

Participants completed questionnaires for global playfulness (*Short Measure of Adult Playfulness*; Proyer, 2012) and happiness (*Orientation to Happiness Scale* [OTH]; German-language version by Ruch et al., 2010). There was a negative correlation with age ($r = -0.13$) and when dividing the sample into 11 age groups he found that mostly groups under 40 years had higher scores in playfulness than the older age groups, but effects were of small size ($d_s \leq 0.40$). However, the difference between the highest and lowest mean score in playfulness were only about half a standard deviation, thus, showing small effects of age on playfulness. Further, playfulness was positively associated with happiness ($r = 0.16$) and the OTH scales ($0.14 \leq r \leq 0.28$), independently from age. Although the findings are limited by the cross-sectional nature of the data, they allow for an initial insight into the role of age on playfulness, showing only small changes in different age groups. While the previously mentioned studies indicate that relationships between playfulness and measures of happiness and satisfaction do not differ across age groups, Yarnal and Qian (2011) examined the broader nomological net of playfulness in older-aged participants by testing relationships with trait descriptors (e.g., “happy,” “joyful,” or “creative”). While the findings converged well with descriptions of young adults (Barnett, 2007), minor differences suggested that age might have an effect on the nomological net. For example, in comparison to younger adults, older adults were described as enthusiastic, creative, relaxed, and joyful. Thus, age might affect associations with certain outcomes and how playfulness is expressed across age groups.

For the OLIW facets, no study has yet examined age effects longitudinally. Cross-sectional correlations showed that Other-directed playfulness relates to younger age ($|r|$ between 0.20 and 0.30) while Lighthearted, Intellectual, and Whimsical playfulness are unrelated to age (Brauer & Proyer, 2017; Brauer et al., 2021a, c; Proyer, 2017; Proyer et al., 2018a, b, 2020). Brauer and Proyer (2017) compared samples of undergraduates with a mean age of 22.5 years and working professionals ($M = 36.7$) and found that these groups also only differed with regard to Other-directed playfulness (Hedges' $g = 0.49$), and the age difference might be a factor that contributes to explain these differences. Nevertheless, studies testing the associations between the OLIW facets and outcomes in populations of middle and older age are missing.

4 The Present Study

Considering that associations between personality traits and RS vary across the life span (see Karney & Bradbury, 1995; Latagne & Furman, 2017), we aimed at replicating PBWC's (2019a) findings on the role of playfulness in romantic couples in older age ranges. We collected data on playfulness and multidimensional measures of RS in older couples and conducted three types of analyses: (1) Computing the partner similarity of the single OLIW facets and their full profiles, (2) testing whether similarity in traits and profiles relate to RS, and (3) testing the actor and partner effects of playfulness on RS in APIM analyses. To our knowledge, this is the first study that examines the OLIW facets and their associations with external variables in participants of middle and older age.

5 Method

5.1 Sample

Our sample comprised 116 opposite-sex couples with a mean relationship duration of 27.6 years ($SD=13.1$ years, median=29 years). The age of participants ranged from 43 to 92 years with an average age of $M=59.2$ years ($SD=8.5$, median=57) in men, and $M=56.9$ years ($SD=8.1$, median=54) in women. The majority of couples lived together (91.8%), were married (87.1%), and had children (87.2%; $n=76$ missing data). The educational status was high as 57.3% reported having a university degree, 23.3% completed vocational training, 3.4% held a high-school diploma qualifying them to attend university, 13.3% held a regular school diploma, and 2.7% chose “other educational status.” Most participants (77.2%) were still working, whereas the remainder was retired or unemployed.

Power Analyses While our sample size meets the recommendations by Ledermann and Kenny (2017), we have also conducted post-hoc power analyses using the APIMPowerR software (Ackerman et al., 2016). Our sample allows to detect typical effect sizes in the field of relationship research ($\beta_{actor/partner}=0.20/0.17$) with 89% and 77% power for actor and partner effects respectively at a 5% type-I error rate.

5.2 Instruments

The *OLIW* questionnaire (Proyer, 2017) assesses four facets of adult playfulness, namely *Other-directed* (e.g., “I use my playfulness to cheer others up”), *Light-hearted* (e.g., “I am an unconcerned person”), *Intellectual* (e.g., “I always have an idea about what to do”), and *Whimsical* playfulness (e.g., “I have the reputation to be a little odd or flamboyant”). Each facet consists of seven items and responses are given on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). There is robust evidence for the reliability (retest-reliability ≥ 0.67 up to three months, internal consistencies ≥ 0.66) and validity of the *OLIW* (e.g., convergent and discriminant validity; factorial validity in exploratory and confirmatory factor analyses [EFA and CFA]; good convergence of self-, peer-, and daily behavior ratings; Proyer, 2017; see also Proyer et al., 2020).

The *Relationship Quality Questionnaire* (RQQ, Siffert & Bodenmann, 2010) assesses six facets of relationship quality with 26 items that are rated on 5-point Likert-type scales (1 = *do not agree*, 5 = *agree very strongly*). The facets *Fascination* (e.g., “I admire many things in my partner”), *Engagement* (e.g., “I invest in our relationship”), *Sexuality* (e.g., “I enjoy sex with my partner”), and *Future* (e.g., “I am confident that our relationship will last”) assess positive aspects, whereas *Mistrust* (e.g., “Sometimes I mistrust my partner”) and *Constraint* (of independence, e.g., “I feel constrained within our partnership”) cover negative aspects. In addition, a latent total score representing global RS is estimated (see e.g., Brauer & Proyer, 2018; PBWC, 2019a), with higher scores indicating higher RS. Siffert and Bodenmann (2010) provide evidence for the reliability ($\alpha \geq 0.78$) and validity of the RQQ; for

example, factorial validity (EFA and CFA), convergent validity (high correlations with measures of RS and relationship stability), and discriminative power by separating groups comprising externally assessed satisfied and unsatisfied participants.

We used the 10-item *Short Relationship Questionnaire* (SRQ, Kliem et al., 2012) to supplement the assessment of RS by considering the SRQ's facets, namely *Togetherness/Communication* (e.g., "He/she tells me that he/she likes me"), *Tenderness* (e.g., "He/she cuddles me"), and *Disagreement* (e.g., "He/she criticizes me in a sarcastic manner"). The three facets are rated on 4-point rating scales (1 = *never*, 4 = *very often*) by three items each. Further, the overall happiness with the relationship is measured by the additional item "How happy do you consider your relationship?" on a scale from 1 (*very unhappy*) to 6 (*very happy*). There is robust evidence for the reliability (e.g., item response parameters), factorial validity (CFA), and discriminative validity (ROC analyses; Kliem et al., 2012).

5.3 Procedure

We used multiple ways to advertise the study; for example, in doctors' offices, schools, fitness studios, dance schools, and adult education centers in different cities in Germany. Further, psychology students could recruit older couples in order to earn course credit. The inclusion criteria were being ≥ 40 years of age and that both partners take part in the study. Participants were provided with a link to the online survey (hosted by www.soscisurvey.de) or with the pen-and-paper booklets of the questionnaires. Participants were asked to complete the questionnaire independently of their partner and were assured that the data would not be shared with their partner. Participation was voluntary and without financial compensation, but participants received an overview of the findings of the study upon request via email.

5.4 Data Analysis

APIM The APIM (Cook & Kenny, 2005) examines the within (actor effects) and between (partner effects) person associations of predictors and outcomes in dyads (see ESM A; model A). To account for the interdependence, the correlation of partners' predictor and outcome variables is modeled. Using the path-analytic approach allows to compute nested models and to test whether actor and/or partner effects are equal for men and women. Therefore, a saturated model (i.e., all effects freely estimated) and a nested, more parsimonious, model in which actor effects and partner effects are constrained to be equal for men and women are compared. The parsimonious model allows to describe the dyadic relationships with only two effects; namely one actor and one partner effect (Cook & Kenny, 2005). This procedure also allows to identify the existence of gender effects because misfit of the equalized model indicates that actor- and/or partner effects differ for the men and women. We compared the saturated and equalized models with χ^2 likelihood-ratio tests and accepted the parsimonious model when the χ^2 difference was non-significant. We follow Kenny and Ledermann's (2010) recommendation to use the liberal level of significance ($p < 0.20$) when testing for nonindependence (see also Cook & Kenny,

2005). We report unstandardized path coefficients (b), as the standardized coefficients β do not allow comparisons of coefficients between men and women because these are based on pooled SD s for the men and women (e.g., Cook & Kenny, 2005). We have computed the standardized effect size Δ by dividing the b coefficient by the SD of the outcome variable⁴ (see e.g., Brauer & Proyer, 2018; PBWC, 2019a). Since we used the same instruments and analytic approach as PBWC (2019a), the unstandardized coefficients can be compared across studies, as the units of measurements are the same. In line with PBWC, we also computed bootstrapped confidence intervals ($k=5,000$ samples), which are provided in the ESM B.

Similarity Analyses We computed two types of similarity analyses for the OLIW facets; namely, *trait wise similarity* and *profile similarity*. While trait wise similarity informs about the partners' similarity in a single facet, profile similarity provides an index of similarity across a full set of traits, in our case the four OLIW facets. This allows for a comprehensive assessment of broad and narrow types of similarity of playfulness in couples. We computed the trait wise similarity by correlating the partners' scores in each OLIW facet. A higher correlation coefficient indicates greater trait similarity among partners. Further, we computed the profile similarity by correlating the set of the partners' OLIW scores in accordance with Furr (2008). Thus, each couple is characterized by a profile similarity correlation coefficient, with higher values indicating higher similarity among partners' OLIW profiles. We then averaged the profile similarity coefficients across all couples to derive a mean profile similarity coefficient⁵ that characterizes the average similarity of the couples. In line with Furr (2008), we computed two profile similarity indexes, raw profile similarity and distinctive profile similarity. While the former is based on the raw OLIW scores, the distinctive profile similarity is computed on basis of the mean-centered OLIW scores (centered separately for men and women; Furr, 2008), which allows controlling for normative ("stereotype") effects.

Finally, we tested whether similarity relates to RS. In line with PBWC (2019a), we computed a series of APIMs that included similarity as additional predictor (see ESM A; model B). This allowed us to examine the contribution of similarity over and beyond actor and partner effects of playfulness. While we used each dyad's profile correlation as index of profile similarity, we computed absolute difference scores to index the trait wise similarity, which are zero when partners show the same scores and increases with greater discrepancies among partners' scores. Hence, note that a positive association between profile similarity and RS indicates that higher similarity goes along with higher RS whereas a positive association between trait wise similarity (absolute differences) and RS indicates that higher discrepancies among partners' scores go along with greater RS.

⁴ For example, $\Delta = 0.5$ indicates that an increase of 1 SD in the predictor variable goes along with an increase of 0.5 SD in the outcome variable.

⁵ Each couple's profile similarity correlation is transformed with Fisher's r -to- z transformation. Based on the z -scores, an average value is computed and then transformed back with the z -to- r procedure.

Evaluating Replicability While there is no consensus on how replicability should be evaluated, we followed Brandt et al.'s (2014) recommendations to examine two criteria. Therefore, we (1) inspected whether the APIM effect parameters of our study fall into the 95% confidence interval (CI) of those reported by PBWC (2019a),⁶ and (2) computed the Q index (Hedges & Schauer, 2019) that informs about the homogeneity of findings. The Q index is computed as the squared difference of the effect parameters of both studies and divided by their variances. Q is χ^2 -distributed with $k-1$ degrees of freedom, in this instance 1 degree of freedom, and used as likelihood-ratio test, with significant values indicating non-random heterogeneity across studies.⁷ Using both criteria allow for a more comprehensive understanding of the stability of the results, as CIs and Q have statistical advantages and disadvantages. Also, we report the effect sizes of the APIM analyses from PBWC's study along with the findings from the present study (Tables 2, 3, 4, and 5) to ease comparisons.

Data Availability All materials, data, syntaxes, and outputs are openly available in the Open Science Framework (<https://bit.ly/3vyWUqX>, anonymized for peer review).

6 Results

6.1 Preliminary Analyses

Descriptive statistics for each instrument are presented in Table 1. The internal consistencies were satisfactory and comparable to PBWC (2019a; all scales ≥ 0.68 ; exception: $\alpha=0.58$ for Intellectual playfulness; Table 1). The distribution of the scores, means, and SD s were comparable to those in PBWC, but our sample showed lower expressions in Other-directed playfulness (Hedges' $g=0.46$ and 0.93 for women and men), sexual RS ($g_{\text{women/men}}=0.43/0.55$), and Tenderness ($g_{\text{women/men}}=0.23/0.33$) whereas Togetherness was higher ($g_{\text{women/men}}=0.33/0.40$) than in PBWC.

While PBWC (2019a) reported small-to-medium effects of gender differences for the OLIW facets ($0.23 \leq d \leq 0.60$) we found negligible effects ($d \leq 0.20$; Table 1). For RS, we found small gender effects for Fascination and Tenderness ($|d| \leq 0.32$). As expected, couples showed positive interdependence in all study variables ($0.12 \leq r \leq 0.64$; Table 1).

We compared the expressions in the OLIW facets with previously published data (Brauer & Proyer, 2017) comprising 244 German-speaking students (mean age = 22.5, $SD=3.5$) and 222 working professionals ($M=36.7$, $SD=12.4$). In comparison, our sample showed lower expressions in Other-directed playfulness than the student sample ($g_{\text{women/men}}=0.45/0.62$) but was similar to the older-aged professionals ($g_{\text{women/men}}=0.00/0.18$). We found no differences in Lighthearted, Intellectual, and Whimsical playfulness.

⁶ The CIs were taken from the openly available Mplus output files that PBWC (2019a) provided in the OSF.

⁷ Hedges and Schauer (2019) recommend setting the significance criterion at $p < .10$ when a small number of studies (in our case two) are considered in the analysis.

Table 1 Internal Consistencies, Descriptive Statistics, Partner Similarity (Pearson Correlation) and –Differences (Cohen’s *d* and Paired Samples *t*-Test) for the OLIW scales, Relationship Quality Questionnaire (RQQ), and Short Relationship Questionnaire (SRQ)

	α	Women		Men		<i>r</i>	<i>d</i>	<i>t</i>
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Playfulness								
<i>Other-directed</i>	.74	4.68	0.89	4.50	1.03	.43***	-0.16	-1.91
<i>Lighthearted</i>	.79	4.02	1.00	4.23	0.97	.20*	0.20	1.76
<i>Intellectual</i>	.58	4.17	0.70	4.16	0.78	.12	0.06	-0.13
<i>Whimsical</i>	.75	4.05	0.86	4.04	0.96	.31***	-0.02	-0.14
RQQ								
<i>Fascination</i>	.78	4.09	0.54	4.22	0.61	.41***	0.23	2.23*
<i>Engagement</i>	.79	4.28	0.46	4.23	0.53	.43***	-0.10	-0.94
<i>Sexuality</i>	.90	3.67	0.96	3.51	1.00	.64***	-0.16	-2.05*
<i>Future</i>	.85	4.60	0.50	4.60	0.56	.50***	0.00	0.04
<i>Mistrust</i>	.76	1.35	0.64	1.46	0.79	.25**	0.15	1.41
<i>Constraint</i>	.85	1.70	0.68	1.74	0.67	.36***	0.06	0.54
SRQ								
<i>Togetherness</i>	.68	6.65	1.79	6.45	1.81	.62***	-0.11	-1.37
<i>Tenderness</i>	.85	6.14	2.21	5.43	2.22	.61***	-0.32	-3.89***
<i>Disagreement</i>	.71	7.26	1.62	7.06	1.72	.31**	-0.12	-1.09
<i>Happiness</i>	-	4.95	1.05	5.06	0.91	.39***	0.11	1.11

N = 116 opposite-sex couples. **p* < .05. ***p* < .01. ****p* < .001. Two-tailed

6.2 Partner Similarity

We found positive and statistically significant trait wise similarities for Other-directed, Lighthearted, and Whimsical playfulness ($r_s \geq 0.20$, $p_s \leq 0.030$; Table 1) and a numerically small positive, but not statistically significant, similarity coefficient for Intellectual playfulness ($r = 0.12$, $p = 0.211$). In comparison to younger couples (PBWC, 2018a, 2019a), older aged couples are characterized by numerically higher similarity in the single facets.

The same was true for the profile similarities. The raw profile similarity was $r = 0.29$ (95%-CI = [0.13, 0.43]; $t_{115} = 3.46$, $p = 0.001$; $z_r = 0.293$). As expected, the distinctive profile similarity coefficient was numerically lower, but yet above chance ($r = 0.23$, 95%-CI = [0.09, 0.37]; $t = 3.11$, $p = 0.002$, $z_r = 0.239$).⁸ While PBWC (2019a) reported comparatively high variability in the profile similarities across couples ($SD_r = 0.74$), our older couples were less heterogeneous in their similarities ($SD_r = 0.56$).

⁸ We combined our and PBWCs (2019a) findings ($N = 327$ couples) through a mini-meta analysis (Goh et al., 2016) and found that the average trait similarity coefficients across independent samples were $r = .34$ (Other-directed), .01 (Lighthearted), .09 (Intellectual), and .25 (Whimsical). The average profile similarity was $r = .47$ (raw profiles) and .16 (distinctive profiles).

Associations with RS All coefficients of the similarity analyses are provided in ESM C. While PBWC (2019a) found only that dissimilarity in Lighthearted playfulness relates to higher engagement, we did not find evidence for replication ($b=0.04$, $p=0.375$, $95\%-CI=[-0.05, 0.13]$). However, dissimilarity in partners' Whimsical playfulness related to greater fascination toward the partner in women ($b=-0.19$, $95\%-CI=[-0.36, -0.01]$, $p=0.040$, $\Delta=0.35$). In line with PBWC (2019a), we found negligible associations between trait- and profile similarity and RS. Thus, similarity is unrelated to RS.

6.3 Associations Between the OLIW Facets and Relationship Satisfaction

Other-directed First, we inspected the actor effects and found that the men and women differed. In comparison to PBWC's (2019a) findings, effects did not replicate for the men (all $bs \leq |0.29|$, $\Delta s \leq 0.15$; Table 2). On the other hand, we found the anticipated positive associations with global RS and its facets in women ($bs \geq 0.14$, $\Delta s \geq 0.14$). As in PBWC, Other-directed playfulness was unrelated to the facets of mistrust and constraint ($bs \leq |0.08|$, $ps \geq 0.073$; $Qs \leq 0.50$, $ps \geq 0.480$), but unlike in younger couples, playfulness was independent from future orientations ($b=0.00$, $p=0.967$; $Q=3.24$, $p=0.071$).

In line with PBWC (2019a), we found no partner effects of men's playfulness, whereas women's playfulness related robustly to their partner's Togetherness, Tenderness, happiness with the relationship, and sexual satisfaction (all $bs \geq 0.33$, $\Delta s \geq 0.33$, $ps \leq 0.018$; Table 2). An exception was that the men's playfulness showed a small negative association with their partner's happiness ($\Delta=0.20$, $b=-0.21$, $p=0.007$; $Q=12.01$, $p<0.001$). Overall, the directions of the partner effects were comparable to those found in PBWC, but coefficients were numerically stronger than in PBWC's younger couples.

Lighthearted While PBWC (2019a) found only one actor effect, with fascination toward the partner, we found no associations between Lighthearted playfulness and RS in actors ($\Delta \leq 0.12$, $bs \leq |0.21|$, $p \geq 0.158$; Table 3). The inspection of partner effects showed that the previously found positive association with mistrust (PBWC, 2019a) was not statistically significant in our sample ($b=0.07$, $p=0.066$) but did fall into the CI of PBWC and did not deviate from their findings ($Q=1.13$, $p=0.289$); thus, there seems to be a trend for partners high in Lighthearted playfulness exhibiting greater mistrust in older age couples as well. Further, we found that women's Lighthearted playfulness related positively to their partner's Togetherness and Tenderness ($bs \geq 0.37$, $\Delta s=0.20$, $ps \leq 0.034$). While PBWC found no association with Togetherness, the relation with Tenderness is replicated well according to the CI and Q criteria (≤ 0.14 , $p \geq 0.705$).

Intellectual Intellectual playfulness was independent from RS in our sample (all $\Delta s \leq 0.11$, $ps \geq 0.216$), except for the positive association with Engagement ($b=0.10$, $p=0.023$, $\Delta_{W/M}=0.22/0.19$; Table 4). Our coefficients did not reach statistical

Table 2 APIM Analyses Predicting Relationship Satisfaction by Other-Directed Playfulness. Effect Sizes for Men and Women of Prior Findings (PBWC), Effect Sizes Δ , Unstandardized Regression Coefficients, Two-Tailed Tests of Significance, Information Whether the Estimates Fall in the 95%-CIs of PBWC (R), and Homogeneity Index Q

	Actor				Partner						
	Present Study		PBWC (2019)		Present Study		PBWC (2019)				
	$\Delta_{W/M}$	$b_{W/M}$	$p(b)$	R_{CI}	Q	$\Delta_{W/M}$	$b_{W/M}$	$p(b)$	R_{CI}	Q	
RQ											
Total	0.12/0.12	0.14/-0.04	0.05/.414	Y/N	0.12/7.53**	0.03/0.03	0.11/-0.05	0.11/-0.05	.106/.197	N/N	1.21/3.20 ⁺
Fascination	0.41/0.27	0.19/-0.05	.002/.391	Y/N	0.26/6.23*	0.00/0.00	0.17/-0.13	0.12/-0.07	.125/.214	N/N	1.97/1.09
Engagement	0.24/0.24	0.32/-0.06	0.15/-0.03	Y/N	0.20/6.62*	-0.02/-0.02	0.21/-0.20	0.11/-0.09	.089/.069	N/N	3.20 ⁺ /1.88
Sexuality	0.16/0.16	0.26/0.01	0.25/0.01	N/N	0.83/1.16	0.26/0.11	0.33/-0.04	0.33/-0.04	.018/.667	Y/N	0.43/1.24
Future	0.15/0.15	0.00/0.00	0.00	N/N	3.24 ⁺ /3.24 ⁺	0.05/0.05	0.04/0.04	0.02	.580	Y/Y	0.04/0.04
Mistrust	-0.07/-0.06	0.00/0.00	0.00	Y/Y	0.50/0.50	0.04/0.04	0.05/0.06	0.04	.491	Y/Y	0.02/0.02
Constraint	-0.12/-0.11	-0.12/-0.12	-0.08	Y/Y	0.02/0.02	-0.02/-0.20	-0.03/-0.03	-0.02	.711	Y/Y	0.00/2.28
SRQ											
Total	0.08/0.08	0.17/-0.05	0.17/-0.05	N/Y	0.90/2.32	0.06/0.06	0.34/-0.04	0.34/-0.04	.016/.557	N/Y	3.82 ⁺ /1.72
Togetherness	0.20/0.21	0.27/0.01	0.48/0.02	Y/N	0.01/4.51*	0.15/0.14	0.39/-0.07	0.70/-0.13	<.001/.476	N/N	2.92 ⁺ /4.35*
Tenderness	0.15/0.16	0.20/-0.13	0.44/-0.29	Y/N	0.07/7.77**	0.16/0.15	0.37/-0.03	0.83/-0.06	.002/.778	N/N	2.61/2.70
Disagreement	0.03/0.03	0.16/-0.15	0.26/-0.26	N/N	1.31/2.60	0.01/0.01	0.23/-0.11	0.39/-0.18	.083/.247	N/N	2.34/1.12
Happiness	0.18/0.20	0.25/-0.08	0.26/-0.07	Y/N	0.48/7.78**	0.12/0.10	0.29/-0.20	0.26/-0.21	.009/.007	N/N	2.21/12.01***

N = 1116 opposite-sex couples. Bold coefficients indicate that the bootstrapped (k = 5,000) 95% CI of the parameter estimate b does not contain zero. RQQ = Relationship Quality Questionnaire. SRQ = Short Relationship Questionnaire. Y = Present estimate falls into PBWC's 95%-CI; N = Present estimate does not fall into PBWC's 95%-CI. ⁺p < .10. *p < .05. **p < .01. ***p < .001. Two-tailed

Table 3 APIM Analyses Predicting Relationship Satisfaction by Lighthearted Playfulness. Effect Sizes for Men and Women of Prior Findings (PBWC), Effect Sizes Δ , Unstandardized Regression Coefficients, Two-Tailed Tests of Significance, Information Whether the Estimates Fall in the 95%-CIs of PBWC (R), and Homogeneity Index Q

	Partner																		
	Actor						Partner												
	PBWC (2019)			Present Study			PBWC (2019)			Present Study									
	$\Delta_{W/M}$	$\Delta_{W/M}$	$b_{W/M}$	$p(b)$	R_{CI}	Q	$\Delta_{W/M}$	$\Delta_{W/M}$	$b_{W/M}$	$p(b)$	R_{CI}	Q	$\Delta_{W/M}$	$\Delta_{W/M}$	$b_{W/M}$	$p(b)$	R_{CI}	Q	
RQQ																			
Total	0.03/0.03	-0.03/-0.03	-0.03	.301	N/N	2.77 ⁺ /2.77 ⁺	-0.02/-0.02	-0.02/-0.02	0.01	.828	Y/Y	0.69/0.69	0.01/0.01	0.01	0.01	.828	Y/Y	0.69/0.69	
Fascination	0.16/0.19	-0.09/-0.08	-0.05	.245	N/N	7.84 ^{**} /7.84 ^{**}	-0.02/-0.02	-0.02/-0.02	0.04	.360	Y/Y	1.00/1.00	0.07/0.08	0.04	0.04	.360	Y/Y	1.00/1.00	
Engagement	0.06/0.06	-0.04/-0.04	-0.02	.635	Y/Y	1.00/1.00	-0.04/-0.04	-0.04/-0.04	0.03	.376	Y/Y	1.39/1.39	0.06/0.07	0.03	0.03	.376	Y/Y	1.39/1.39	
Sexuality	0.07/0.07	-0.02/-0.02	-0.02	.721	Y/Y	1.05/1.05	0.03/0.03	0.03/0.03	0.05	.422	Y/Y	0.07/0.07	0.05/0.05	0.05	0.05	.422	Y/Y	0.07/0.07	
Future	-0.05/-0.05	-0.10/-0.09	-0.05	.266	Y/Y	0.12/0.12	-0.10/-0.10	-0.10/-0.10	-0.02	.633	Y/Y	0.47/0.47	-0.04/-0.04	-0.02	-0.02	.633	Y/Y	0.47/0.47	
Mistrust	-0.03/-0.03	0.06/0.05	0.04	.301	Y/Y	1.13/1.13	0.17/0.17	0.17/0.17	0.07	.066	Y/Y	1.13/1.13	0.09/0.11	0.07	0.07	.066	Y/Y	1.13/1.13	
Constraint	-0.05/-0.05	-0.12/0.12	-0.08/0.08	.158/.188	Y/N	0.39/2.77 ⁺	-0.02/-0.03	-0.02/-0.03	0.01	.857	Y/Y	0.22/0.22	0.01/0.01	0.01	0.01	.857	Y/Y	0.22/0.22	
SRQ																			
Total	0.03/0.03	-0.01/-0.01	-0.01	.791	Y/Y	0.55/0.55	0.07/0.01	0.07/0.01	0.14/-0.04	.070/.525	N/N	0.61/0.23	0.14/-0.04	0.14/-0.04	0.14/-0.04	.070/.525	N/N	0.61/0.23	
Togetherness	0.10/0.11	0.04/-0.04	0.08/-0.08	.610/.693	Y/N	0.61/1.90	0.05/0.05	0.05/0.05	0.20/-0.15	.017/.115	N/N	1.72/3.15 ⁺	0.20/-0.15	0.37/-0.27	0.37/-0.27	.017/.115	N/N	1.72/3.15 ⁺	
Tenderness	0.06/0.06	0.01/-0.09	0.02/-0.19	.912/.419	Y/N	0.42/1.37	0.15/-0.03	0.15/-0.03	0.44/-0.11	.034/.619	Y/Y	0.14/0.02	0.20/-0.05	0.44/-0.11	0.44/-0.11	.034/.619	Y/Y	0.14/0.02	
Disagreement	-0.02/-0.02	0.10/-0.12	0.16/-0.21	.226/.175	N/N	1.44/0.96	-0.08/-0.10	-0.08/-0.10	-0.01	.934	Y/Y	0.84/0.84	-0.01/-0.01	-0.01	-0.01	.934	Y/Y	0.84/0.84	
Happiness	-0.06/-0.07	-0.03/-0.03	-0.03	.603	Y/Y	0.12/0.12	-0.05/-0.04	-0.05/-0.04	0.01	.941	Y/Y	0.41/0.41	0.01/0.01	0.01	0.01	.941	Y/Y	0.41/0.41	

$N = 1116$ opposite-sex couples. Bold coefficients indicate that the bootstrapped ($k = 5,000$) 95% CI of the parameter estimate b does not contain zero. RQQ = Relationship Quality Questionnaire. SRQ = Short Relationship Questionnaire. Y = Present estimate falls into PBWC's 95%-CI; N = Present estimate does not fall into PBWC's 95%-CI. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. Two-tailed

Table 4 APIIM Analyses Predicting Relationship Satisfaction by Intellectual Playfulness. Effect Sizes for Men and Women of Prior Findings (PBWC), Effect Sizes Δ , Unstandardized Regression Coefficients, Two-Tailed Tests of Significance, Information Whether the Estimates Fall in the 95%-CIs of PBWC (R), and Homogeneity Index Q

	Actor				Partner							
	PBWC (2019)		Present Study		PBWC (2019)		Present Study					
	$\Delta_{W/M}$	$b_{W/M}$	$p(b)$	R_{CI}	Q	$\Delta_{W/M}$	$b_{W/M}$	$p(b)$	R_{CI}	Q		
RQ												
Total	0.12/0.12	0.05/0.05	0.05	.287	N/N	1.96/1.96	-0.01/-0.01	0.02/0.02	0.02	.671	Y/Y	0.36/0.36
Fascination	0.29/0.33	0.09/0.08	0.05	.325	N/N	3.56 ⁺ /3.56 ⁺	0.06/0.05	0.05/0.06	0.03	.632	Y/Y	0.00/0.00
Engagement	0.26/0.25	0.22/0.19	0.10	.023	Y/Y	0.22/0.22	-0.14/-0.14	0.00/0.00	0.00	.965	Y/Y	1.53/1.53
Sexuality	0.21/0.21	0.03/0.03	0.03	.725	N/N	1.92/1.92	0.07/0.07	0.00/0.00	0.00	.996	Y/Y	0.29/0.29
Future	0.19/0.19	0.04/0.04	0.02	.574	N/N	2.53/2.53	-0.02/-0.02	0.02/0.02	0.01	.744	Y/Y	0.12/0.12
Mistrust	0.03/0.03	0.03/0.03	0.02	.741	Y/Y	0.00/0.00	0.14/0.15	0.16/-0.13	0.13/-0.08	.180/.286	Y/N	0.03/4.06*
Constraint	-0.09/-0.09	0.00/0.00	0.00	.970	Y/Y	0.80/0.80	0.04/0.04	0.10/-0.21	0.07/-0.14	.417/.036	Y/N	0.18/3.91*
SRQ												
Total	-0.02/-0.02	-0.08/-0.08	-0.08	.216	N/N	0.62/0.62	0.01/0.01	0.13/0.13	0.13	.060	N/N	2.72 ⁺ /2.72 ⁺
Togetherness	0.09/0.09	-0.07/-0.07	-0.13	.432	N/N	1.99/1.99	0.00/0.00	0.13/0.13	0.23	.140	Y/Y	1.17/1.17
Tenderness	0.03/0.03	-0.11/-0.11	-0.25	.225	N/N	1.44/1.44	-0.01/-0.01	0.21/0.21	0.47	.012	N/N	4.27*/4.27*
Disagreement	0.18/0.15	0.02/0.02	0.04	.795	N/N	1.80/1.80	0.06/0.08	0.09/0.09	0.15	.256	Y/Y	0.06/0.06
Happiness	0.08/0.10	0.01/0.01	0.01	.875	Y/Y	0.42/0.42	0.10/0.08	0.10/0.09	0.09	.265	Y/Y	0.01/0.01

N = 1116 opposite-sex couples. Bold coefficients indicate that the bootstrapped (*k* = 5,000) 95% CI of the parameter estimate *b* does not contain zero. RQ = Relationship Quality Questionnaire. SRQ = Short Relationship Questionnaire. Y = Present estimate falls into PBWC's 95%-CI; N = Present estimate does not fall into PBWC's 95%-CI. ⁺*p* < .10. **p* < .05. ****p* < .001. Two-tailed

significance but replicated the direction and magnitude of effects in comparison to PBWC (2019a) according to the Q statistic (all ≤ 2.53 , $p \geq 0.111$; exception: Fascination $Q = 3.56$, $p = 0.059$).

While PBWC (2019a) reported only a small trend for a partner effect regarding mistrust ($b = 0.11$, $p = 0.028$, $\Delta = 0.15$), we also found this association but only for women's Intellectual playfulness ($b = 0.13$, $\Delta = 0.16$; Table 4). While this effect replicated almost identically ($Q = 0.03$, $p = 0.858$) it was not statistically significant in our study ($p = 0.180$). Further, our sample showed a positive partner effect independently from gender for greater Togetherness ($b = 0.47$, $p = 0.012$, $\Delta = 0.21$) that did not exist in younger couples ($Q = 4.27$, $p = 0.039$). Finally, women reported fewer experiences of constraint when their partner was high in Intellectual playfulness ($b = -0.14$, $p = 0.036$, $\Delta = 0.21$; $Q = 3.91$, $p = 0.048$) while women's Intellectual playfulness was unrelated from men's feelings of constraint ($b = 0.07$, $p = 0.417$) as in PBWC ($Q = 0.03$, $p = 0.858$).

Whimsical We found no robust actor effects for Whimsical playfulness ($b \leq 0.14$, $\Delta \leq 0.13$, $p \geq 0.141$; Table 5). While all parameters numerically replicated PBWC's (2019a) findings (i.e., all parameters fall into previously reported CIs; $Qs \leq 1.98$, $p \geq .159$), associations with fascination and engagement found by PBWC did not exist in older couples. Thus, Whimsical playfulness is independent from RS in older-aged actors.

While PBWC (2019a) only found evidence for a small partner effect between Whimsical playfulness and sexual satisfaction, we found robust partner associations with total RS and its facets Togetherness and Tenderness ($bs \geq 0.32$, $p \leq 0.003$, $\Delta \geq 0.18$). Further, we numerically replicated PBWC's positive partner effect for sexual satisfaction ($b = 0.10$, $p = 0.146$, $\Delta = 0.10$; $Q = 0.02$, $p = 0.901$).

7 Discussion

Our study aimed at replicating and extending prior findings on the associations between playfulness and relationship satisfaction (RS) in couples by using the same design as PBWC (2019a). As an extension to PBWC, we studied couples of middle and older ages. To our knowledge, this is the first study to examine the OLIW facets (Proyer, 2017) and their relations to external variables in middle-aged and older couples. Overall, our findings support the notion that playfulness is related to facets of RS in romantic relationships in couples of middle and older age. Hence, continuing to play does not stop the aging process but may support experiencing satisfaction in romantic relationships in middle and older age alike. A strength of the study is that we can show that the latter is true, for a positive association within a person (actor effect) and, also, between the partners (i.e., his/her playfulness relates positively to their partner's RS). Hence, looking for and selecting a playful partner at a younger

Table 5 APIM Analyses Predicting Relationship Satisfaction by Whimsical Playfulness. Effect Sizes for Men and Women of Prior Findings (PBWC), Effect Sizes Δ , Unstandardized Regression Coefficients, Two-Tailed Tests of Significance, Information Whether the Estimates Fall in the 95%-CIs of PBWC (R), and Homogeneity Index Q

	Actor				Partner							
	Present Study		PBWC (2019)		Present Study		PBWC (2019)					
	$\Delta_{W/M}$	$b_{W/M}$	$p(b)$	R_{CI}	Q	$\Delta_{W/M}$	$b_{W/M}$	$p(b)$	R_{CI}	Q		
RQQ												
Total	0.06/0.06	0.03/0.03	0.03	.313	Y/Y	0.50/0.50	-0.01/-0.01	0.05/0.05	0.05	.143	N/N	2.77 ⁺ /2.77 ⁺
Fascination	0.18/0.21	0.09/0.08	0.05	.209	Y/Y	1.00/1.00	0.02/0.02	0.11/0.13	0.07	.090	N/N	1.44/1.44
Engagement	0.20/0.20	0.13/0.11	0.06	.141	Y/Y	0.64/0.64	-0.08/-0.08	0.11/0.13	0.06	.142	N/N	4.00 ⁺ /4.00 ⁺
Sexuality	0.09/0.09	0.07/0.07	0.07	.253	Y/Y	0.02/0.02	0.13/0.13	0.10/0.10	0.10	.146	Y/Y	0.02/0.02
Future	0.05/0.05	0.00/0.00	0.00	.962	Y/Y	0.36/0.36	-0.10/-0.10	-0.11/0.16	-0.06/0.08	.236/0.059	Y/N	0.00/7.84 ⁺
Mistrust	-0.05/0.16	0.02/0.01	0.01	.925	Y/Y	0.50/1.98	0.10/0.11	0.37/-0.03	0.18/-0.02	.051/0.672	N/N	1.03/2.44
Constraint	0.00/0.00	0.09/0.09	0.06	.200	Y/Y	0.72/0.72	-0.05/-0.05	0.10/-0.16	0.07/-0.11	.393/0.043	N/Y	1.51/0.94
SRQ												
Total	0.03/0.03	0.06/0.06	0.06	.197	N/N	0.31/0.31	0.02/0.02	0.17/0.17	0.17	< .001	N/N	11.25 ⁺ */11.25 ⁺ ***
Togetherness	0.08/0.08	0.08/0.08	0.14	.265	Y/Y	0.03/0.03	0.08/0.08	0.18/0.18	0.32	.003	Y/Y	0.93/0.93
Tenderness	0.08/0.08	0.08/0.08	0.17	.249	Y/Y	0.01/0.01	0.05/0.05	0.28/0.28	0.61	< .001	N/N	8.34 ⁺ */8.34 ⁺ **
Disagreement	0.06/0.05	0.01/0.01	0.02	.842	Y/Y	0.19/0.19	-0.05/-0.06	-0.02/-0.02	-0.04	.740	Y/Y	0.08/0.08
Happiness	-0.05/-0.06	0.08/0.09	0.08	.189	N/N	2.77 ⁺ /2.77 ⁺	-0.05/-0.04	-0.03/0.19	-0.03/0.20	.721/0.006	Y/N	0.01/7.78 ⁺ **

N = 116 opposite-sex couples. Bold coefficients indicate that the bootstrapped (k = 5,000) 95% CI of the parameter estimate b does not contain zero. RQQ = Relationship Quality Questionnaire. SRQ = Short Relationship Questionnaire. Y = Present estimate falls into PBWC's 95%-CI; N = Present estimate does not fall into PBWC's 95%-CI. ⁺p < .10. *p < .05. ***p < .001. Two-tailed

age may have lasting benefits not only immediately at a younger age, but also when growing older together.

The dyadic data showed several interesting deviations from younger couples examined in earlier studies (PBWC, 2018a, 2019a). First, while PBWC (2019a) reported robust gender differences for all OLIW facets, with men showing higher expressions than women, we found negligible mean differences for gender in middle-aged and older couples. This is in line with findings from a large cross-sectional data set (Proyer et al., 2010) with people of mixed relationship status (see also Chick et al., 2020). Also, the comparison of the OLIW scores with samples of younger individuals (Brauer & Proyer, 2017) implied that age differences are negligible for Lighthearted, Intellectual, and Whimsical playfulness. Thus, in line with Proyer (2014b), our findings suggest that playfulness is similarly expressed in middle and older age groups as in younger people, and, thus, does not appear to diminish with increasing age. In line with prior studies (e.g., Brauer & Proyer, 2017; Brauer et al., 2021a, c; Proyer, 2017) we found that older men showed comparatively lower expressions in Other-directed playfulness. However, it must be noted that the comparisons in our and prior studies are made *between* participants cross-sectionally and, thus, do not allow conclusions about within-person change *over time*. Thus, findings should be interpreted as preliminary and warrant replication using longitudinal data.

Further, we found markedly higher partner similarity in traits and profiles than in younger couples (PBWC, 2018a, 2019a). Also, our sample was more homogeneous in their similarity (i.e., lower variability of similarity across couples). One might view this finding from the so-called attrition effect: There is good evidence that partners generally do not tend to become more similar over time (e.g., Luo, 2017) and that couples who do not change in their similarity stay together whereas changes in partner similarity predict relationship dissolution (e.g., Rammstedt et al., 2013). This leads to finding higher average partner similarity in older age couples, as dissimilar couples likely dissolved their relationship in earlier stages. Thus, our older couples with comparatively long relationship durations might be particularly characterized by a higher level of similarity in playfulness because it might contribute to reducing conflict and tension in a way that supports the longevity of their relationship (Luo, 2017). This may be an effect of successful application of assortative preferences and be the result of the selection process of partners for long-term relationships. In conclusion, our findings lend support to Rammstedt and Schupp's (2008) notion of congruent couples being more likely to stay together. However, this speculation should be verified in a longitudinal study examining the within-person/couple changes (e.g., Lenhausen et al., 2020; Rammstedt & Schupp, 2008). However, as in PBWC's findings partner similarity in playfulness did not relate to RS beyond actor and partner effects. However, taking our notion on attrition into account, similarity might have effects over time that are not expressed at the cross-sectional level but longitudinally (e.g., Weidmann et al., 2017).

Our APIM analyses of associations between facets of playfulness and RS showed differential findings. Overall, the majority of PBWC's (2019a) findings replicated well based on the overlap of CIs and heterogeneity statistics (Brandt et al., 2014). In line with PBWC, we found that predominantly Other-directed playfulness related to

RS, positively and with small-to-medium effect sizes for actor and partner effects. However, in our couples, those associations existed only in women. Prior research has shown that playfulness positively predicted resilience longitudinally in a sample of 167 women of 50+ years of age (Chang et al., 2016). There, they only tested women who engaged in leisure groups (so-called Red Hat Societies) and, thus, it is unclear whether gender differences would exist. Nevertheless, testing the role of gender might be an interesting research avenue for future research. For Intellectual playfulness, we found a contrary pattern to PBWC; namely, no robust actor effects but positive partner effects for global RS. In accordance with PBWC, Lighthearted and Whimsical types of playfulness were independent of actors' and their partner's global RS.

While relationships with global indicators of RS replicated well, differences to PBWC (2019a) existed on the facet-level of RS. Most strikingly, we found only partial replication regarding Other-directed playfulness because both actor and partner effects existed only for women whereas men's Other-directed playfulness did not relate to RS. Thus, women high in Other-directed playfulness showed greater overall RS and specifically in the subdomains of fascination toward the partner, being engaged in the relationship, sexual satisfaction, and togetherness in actors and this spilled over to their partner's RS (i.e., sexual satisfaction, Togetherness, Tenderness, and happiness). Hence, playfulness seems to be relevant for closeness, intimacy, and sexuality in older age in similar ways than described in younger samples (e.g., Bem & Paasonen, 2021; Betcher, 1981; Brasini et al., 2020; Brauer et al., 2021a, b; Proyer et al., 2019a). Contrary to the literature (e.g., Brauer et al., 2021b; PBWC, 2019a), men's Other-directed playfulness related *negatively* to their partner's happiness and was independent from RS in actors and partners in the remaining facets.

Considering the differences in men's Other-directed playfulness in comparison to younger samples, one might argue that lower expressions in Other-directed playfulness in older age might also reduce its positive effects for relationships and the partner's satisfaction (see e.g., Yarnal & Qian, 2011). The notion that social components of playfulness might be reduced with older age receives support from the literature. For example, Proyer et al. (2010) found that playfulness was lower among older participants who did not participate in social activities (e.g., meeting friends) than those who did. Also, research from other areas suggests that older men tend to engage less in social activities compared to women (see Tomioko et al., 2017), which might affect their Other-directed playfulness. Using multimethod assessment approaches including, for example, real-life observations and diary methods might contribute to understand the relations between this facet of playfulness and external variables. Further, Brauer et al. (2021b) suggested examination of the playfulness-RS associations in the nomological net of age trajectories but also of important third variables that might also help to understand the present findings, as individual and dyadic level variables might play a mediating or moderating role for men's Other-directed playfulness in relationships. For example, prior studies have shown that playfulness relates to positive coping in individuals (e.g., Magnuson & Barnett, 2013; Proyer, 2014a; Qian & Yarnal, 2011) and considering the important role of *dyadic* coping (i.e., how couples deal with internal and external stressors) and dealing with conflicts for couples' RS

(e.g., Herzberg & Sierau, 2016; Sierau & Herzberg, 2012), future studies should investigate and identify potential third variables that translate the effects of playfulness on RS. Further, research has identified several variables that contribute to understand differences in RS in the elderly. For example, besides age-related phenomena (e.g., illness), individual differences in interpersonal aspects such as loneliness (also in couples), attachment styles, and perceptions of providing and receiving daily emotional support have been identified to affect global RS and well-being in older age (e.g., Huo et al., 2019; Stokes, 2017). Similarly, narrow behaviors such as older couples' sexual expression affect facets such as sexual satisfaction (Warner & Lyons, 2020).

Beyond individual and dyad-level characteristics, socio-normative aspects might contribute to understand the findings as well. One reviewer suggested that higher levels of playfulness might not be normative for older people and that women might therefore not appreciate their partner's playfulness because the partner might "not act according to their age." Taken together our data only allow for speculation on why effects of Other-directed playfulness are more pronounced in women in comparison to men. Future research studying mediating or moderating variables might contribute to understand the present findings, regarding the effects of gender and age.

As in younger couples, Lighthearted playfulness does not relate to RS in actors, but yields gender-dependent positive partner effects (i.e., women's Lighthearted playfulness related to their partner's RS) with regard to physical and emotional affection. Although not reaching statistical significance, we replicated a trend of Lighthearted playfulness being related to the partner's mistrust similarly to PBWC's (2019a) findings. Pending further research, this might hint that partners of lightheartedly playful people are inclined to experience this type of playfulness (i.e., seeing life as a game; low seriousness) in their partner as threatening to the relationship, even in long-enduring relationships. In line with research showing that partner perceptions incrementally contribute to understand relationship outcomes (Brauer et al., 2021d), it seems advisable to examine how one perceives their partner's Lighthearted playfulness and whether this contributes to one's RS beyond the actual expressions of the partner's playfulness.

For Intellectual and Whimsical playfulness, we found patterns contrary to PBWC (2019a): While both types showed no partner effects in younger couples, we found that both had positive effects for partners' Tenderness, Togetherness (Whimsical), and lower mistrust in women (Intellectual). Thus, the comparison with prior findings might indicate that the role of playfulness might change over time.

Taking our and PBWC's findings together, one could argue that the effects of playfulness for RS seem to change from having predominantly intra-individual effects at younger ages toward a partner-oriented function in older couples. It could be speculated that the role of playfulness in couples might change as well, from being relevant to one's happiness to being directed at stabilizing the dyadic relationship and contributing to the partner's RS. We conclude that playfulness relates mostly to positive experiences in romantic relationships, in narrow domains (e.g., sexuality) but also broader levels of satisfaction. Also, when thinking about the comparison with data from previous studies with younger samples (PBWC, 2018a,

2019a), differences in the current situation of the participants need to be considered (e.g., different phases of the work-life or decisions around having children being a parent/not being a parent; Baumann et al., 2020). Also, retirement is a situation that presents many opportunities, but also challenges to couples.

While we focused on the role of playfulness at older ages, one might also argue that changes in RS across the lifespan play a role for differences in our findings. While some studies found that RS is stable over time, others suggest decline or increase (e.g., van Scheppingen et al., 2018; VanLaningham et al., 2001). Research employing multi-faceted instruments of RS show nuanced developments (e.g., decline in sexual satisfaction but stability in other domains; Quinn-Nilas, 2020). Longitudinal studies are needed to clarify the trajectories of playfulness and RS over time, their interplay, and the invariance of actor and partner effects across age and time.

While we have not tested for causality, the question arises how older people could capitalize on their playfulness for increasing their RS. There is initial evidence that self-administered playfulness-based interventions have the potential to increase subjectively reported levels of playfulness and happiness and ameliorate sub-clinical levels of depressive symptoms (Proyer et al., 2021). It would be interesting to test whether couples who both engage (or at least one partner does) in such a training program experience higher levels of RS. Also, spillover effects to the partner's playfulness and RS are feasible. Research around positive psychology interventions might be a good starting point for designing such a program.

Our findings must be interpreted under consideration of several limitations. First, although our sample size allowed detection of typical effect sizes in relationship research, replication in a second sample of elderly participants would be desirable to ensure the stability of our findings. Secondly, our findings are limited in generalizability as we only tested German-speaking and opposite-sex couples. Further extension to non-German samples and same-sex couples is desirable to examine the invariance of findings. Thirdly, a statistical limitation is that analyses of trait wise similarity were based on absolute difference scores. While this approach allowed to compare our findings with prior research, more advanced methods are recommended for analyses of congruence effects (see e.g., Brauer & Proyer, 2020; Schönbrodt et al., 2018). However, such models require larger sample sizes and lead to substantial increases in coefficients that need to be tested. Fourthly, although we used two criteria to evaluate the replicability of prior findings, there is no consensus on how to define "successful" replication (e.g., Brandt et al., 2014). Although our study's prime aim was replicating PBWC's (2019a) findings, extension would be desirable: As PBWC, we only collected self-ratings of playfulness and RS, but considering that the inclusion of partner ratings contributes incrementally to understand the associations between personality traits and relationship outcomes (cf. Brauer et al., 2021d), we recommend collecting partner ratings in future research. Fifthly, future research might consider mediator and moderator variables that could contribute to explaining the findings (cf. Brauer et al., 2021b for a discussion). Finally, the cross-sectional nature of our data does not allow conclusions regarding the causal associations between playfulness and RS. Moreover, the comparison between ours and PBWC's (2019a)

findings of younger and older couples does not account for potential within-person and within-dyad changes over time (see Latagne & Furman, 2017; Lenhausen et al., 2020; van Scheppingen et al., 2018). Therefore, longitudinal research would further expand the knowledge on the effects of life events and living conditions in the trajectories of both playfulness and RS. However, our findings are a starting point for a better understanding of the role of playfulness in romantic life across the life span.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s41042-021-00058-8>.

Acknowledgements The authors are grateful to Luise Priem and Leonie Brendler for their assistance with the data collection, and Rebekka Herrmann and Anna Ramona Rößner for their help with preparing the tables and secondary analyses.

Author Contribution Conception and design of the work: KB and RP. Data collection: KB, RS, and RP. Data analysis: KB and RS. Drafting the manuscript and critical revision: KB, RS, TS, RP, and GC.

Funding This research did not receive funding.

Availability of Data and Material All data and syntaxes are available in the Open Science Framework under <https://osf.io/x3zcr/>.

Code Availability All data and syntaxes are available in the Open Science Framework under <https://osf.io/x3zcr/>.

Declarations

Ethics 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.

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

Consent for Publication Not applicable.

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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