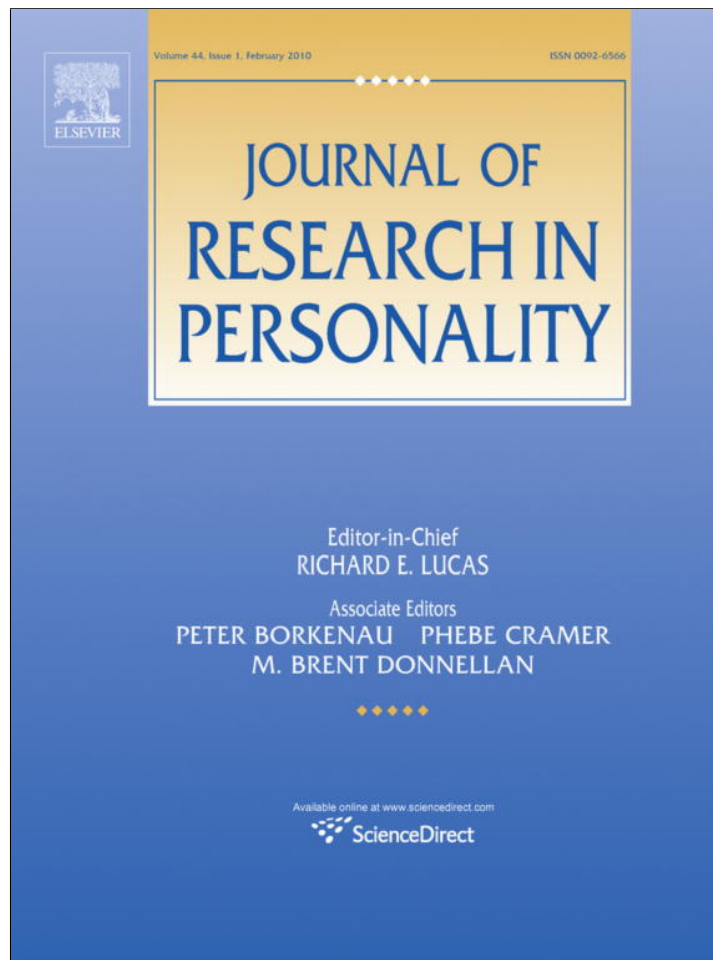


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Brief Report

Acquaintanceship length as a moderator of self-informant agreement in life-satisfaction ratings

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ABSTRACT

Meta-analyses have shown moderate agreement between self-ratings and informant ratings of personality and well-being. The influence of acquaintanceship length on self-informant agreement in life-satisfaction judgments was examined using 922 participants from friendship and relationship dyads. Data were analyzed using non-linear mixed models to estimate the shape of the acquaintanceship effect and to account for the dependence of dyadic data. Results revealed a significant, non-linear acquaintanceship effect, indicating that self-informant agreement increases over the first 3 years of a relationship to within 90% of the maximum level of agreement. The maximum agreement was estimated to be $r = .34$, which is consistent with meta-analytic findings of self-informant agreement in life-satisfaction judgments for well-acquainted informants.

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1. Introduction

Making advances in the science of well-being, as with any field of science, depends on the quality of its measures. However, the lack of objective criteria available to validate subjective measures of well-being makes it difficult to estimate the accuracy of these measures (Diener, Lucas, Schimmack, & Helliwell, 2009). Agreement between self and informant ratings of well-being has emerged as an important method for validating well-being measures in the absence of objective criteria (Schneider & Schimmack, 2009). The assumption is that higher agreement indicates higher validity (Campbell & Fiske, 1959).

A recent meta-analysis by Schneider and Schimmack (2009) found an average self-informant correlation of $r = .42$ for well-being measures, demonstrating that well-being measures have some validity and some rater-specific variance that could reflect rating biases. The meta-analysis also revealed moderators of self-informant agreement, namely that self-informant agreement increased with multiple informants, older participants, and multiple-item measures. A plausible additional moderator is acquaintanceship. The acquaintanceship effect, that is, an effect of acquaintanceship length on self-informant agreement, could not be investigated in the meta-analysis because almost all of the studies did not report the average length of acquaintanceship for their samples.

Several studies have documented an acquaintanceship effect for personality judgments (e.g. Funder & Colvin, 1988; Funder, Kolar, &

Blackman, 1995; Paulhus & Bruce, 1992). Studies with well-acquainted informants produce higher self-informant agreement than studies with zero-acquaintance informants (Connolly, Kavanaugh, & Viswesvaran, 2007). Other studies have found effects of length of acquaintanceship. For example, Kurtz and Sherker (2003) had college roommates rate each other on the big five personality traits after living with each other for 2 weeks and after 15 weeks. They found that agreement with self-ratings across all traits increased from $r = .27$ at 2 weeks to $r = .43$ at 15 weeks. Paulhus and Bruce (1992) found a similar trend over time when previously unacquainted groups of people met each other over a series of weekly 20-min discussions. Agreement between self and informant ratings of personality increased from the first week to the seventh week. However, some studies failed to find an acquaintanceship effect (e.g. Park, Kraus, & Ryan, 1997). Null-findings could occur because the size of the acquaintanceship effect is quite small and studies of self-informant agreement often rely on relatively small samples (Schneider & Schimmack, 2009).

Few studies have examined acquaintanceship as a moderator of self-informant agreement in well-being, namely judgments of positive and negative affect and cognitive judgments of life-satisfaction (Diener, 1984). Although affective indicators and life-satisfaction judgments are highly correlated, they show discriminant validity (Lucas, Diener, & Suh, 1996; Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002; Schimmack, Schupp, & Wagner, 2008). A few papers examined self-informant agreement for affective indicators of well-being. Watson and Clark (1991) found moderator effects of self-rated closeness on self-informant agreement in affect ratings. Agreement was higher for the closest informant ($r = .25$) of targets compared to the least close informant ($r = .15$). Watson,

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Hubbard, and Wiese (2000) compared self-informant agreement in affect ratings by married couples, dating couples, and friendship pairs. They found that married couples had higher agreement than dating couples and friendship pairs. However, additional analyses showed that length of acquaintanceship was not a statistically significant moderator of self-informant agreement.

The latter finding raises questions about the finding of higher self-informant agreement for spouses than for other dyads. One explanation for this finding could be that well-being judgments of spouses are strongly influenced by projection effects; that is, individuals project their own well-being on their impression of the well-being of close others. Projection can produce some agreement in well-being judgments of spouses because spouses tend to have similar levels of well-being (Bookwala & Schulz, 1996; Schimmack & Lucas, *in press*). In contrast, well-being levels of friendship pairs and dating couples are less similar (Petrican & Schimmack, 2008; Schneider & Schimmack, 2009; Walker & Schimmack, 2008). A more troubling explanation could be that self-ratings and informant ratings of spouses' well-being are influenced by shared biases. In this case, higher agreement for married couples would not imply that reports by spouses provide more valid information about targets' well-being.

The non-significant results for length of acquaintanceship in the study by Watson et al. (2000) is puzzling because acquaintanceship should moderate this relationship to account for substantially higher self-informant agreement in studies with well-acquainted informants (Schneider & Schimmack, 2009) compared to zero-acquaintance studies (Yeagley, Morling, & Nelson, 2007). A plausible explanation for the null-finding is low statistical power to detect acquaintanceship effects. Even in studies that show statistically significant acquaintanceship effects, the effect size is small to moderate. Thus, large sample sizes are needed to reliably detect moderator effects. A second reason is that Watson et al. (2000) used linear regression to test acquaintanceship effects. This is problematic because the acquaintanceship effect is likely to be non-linear because most of the increases in agreement should occur at the beginning of a relationship (Kurtz & Sherker, 2003). As a result, it is necessary to examine acquaintanceship effects in (a) large samples, that (b) include a sufficient number of relatively brief relationships, and (c) to use non-linear models of acquaintanceship effects. Our study is the first study that fulfills these requirements.

Another obstacle in the study by Watson et al. (2000) was the use of affect ratings because self-informant agreement for affect ratings is rather modest (Schneider & Schimmack, 2009), and decreasing effect sizes also decreases the power of detecting moderator effects. Thus, we focused on life-satisfaction judgments in our study because life-satisfaction judgments produce higher self-informant agreement than affect ratings (Schneider & Schimmack, 2009). This may be due to the cognitive nature of life-satisfaction judgments. Raters may have more information about people's actual life circumstances and their ideals than about targets' affective experiences. Affective ratings may be based on non-verbal cues that are only visible when targets experience strong emotions.

In sum, the main purpose of our study was to examine the shape of acquaintanceship effects on self-informant agreement in life-satisfaction judgments. The results provide well-being researchers with guidelines about the minimum length of relationships to obtain valid informant ratings of life-satisfaction.

2. Method

The data for this study were taken from two dyadic studies of well-being conducted at the University of Toronto Mississauga. The first sample included 190 dating couples, with 379 participants

completing all measures of interest. The mean age of the sample was 19.5 (SD = 1.9), and the average relationship length was 20.2 months (SD = 12.9). The second study involved 272 same-sex friendship pairs (78% female) from the same student population. Of these participants, 543 of them completed the measures of interest. The mean age of the sample was 19.1 (SD = 2.0), and the average friendship length was 53.3 months (SD = 53.8). A subsample of this sample was also used in a study that compared self and informant ratings of life-satisfaction and satisfaction with life domains (Schneider & Schimmack, *submitted for publication*). This study did not examine moderator effects. We did not include domain satisfaction in the present study because not all participants made domain satisfaction ratings and we needed a large sample to detect acquaintanceship effects.

Both members of the dyads served as targets and informants to increase the sample size and statistical power of our analyses based on 462 dyads. Although the observations are not independent, the dyadic design increases power over a typical design with 462 targets and informants because both members of a dyad provide only modestly correlated life-satisfaction ratings (Schneider & Schimmack, 2009). As a result, our study had sufficient statistical power to detect moderate acquaintanceship effects (Schimmack, 2009).

Participants were seated in separate rooms and independently completed a variety of tasks and measures. The measure of interest for this analysis was a three-item life-satisfaction scale based on the first three items of the Satisfaction With Life Scale (SWLS, Diener, Emmons, Larsen, & Griffin, 1985; Schimmack & Oishi, 2005). We only used the first three items of the SWLS because Item Response Test models suggest that these items have better item characteristics than the last two items (Oishi, 2006). Items were rated on a 7-point Likert scale, from 1 = strongly disagree to 7 = strongly agree. The three-item scale demonstrated good reliability in this study (self-ratings $\alpha = .83$, informant ratings $\alpha = .80$).

Friends reported the length of the friendship and dating couples reported how long they had been dating. It is possible that some couples could have been friends for longer than the length of their dating relationship. However, it is unlikely that this error in our measure of relationship length is systematically related to actual relationship length. Secondly, this is unlikely to influence our results because the correlation between reported length of relationship and true length of acquaintanceship is likely to be very high even if a few dating couples were friends before. Lastly, error due to acquaintanceship length being longer than the relationship length would actually work against our hypothesis. Therefore any evidence that we find for our hypothesis despite this possible source of error speaks to how robust the findings are.

3. Results

First, we computed simple self-informant correlations for life-satisfaction ratings. Self-informant convergence for the entire sample was $r = .26$ ($N = 922$, 95% Confidence Interval [CI] = .18|.33). This amount of self-informant agreement is lower than self-informant agreement in other studies (Schneider & Schimmack, 2009). One explanation could be that informants in other studies were well-acquainted (e.g. family members). To investigate acquaintanceship effects in our data, we first conducted standard tests of moderator effects using moderated regression analysis. We used the cluster function of MPLUS5 (Muthén & Muthén, 2008) to obtain standard errors and confidence intervals that take the dependence between members of the same dyad into account. The length of acquaintanceship was not normally distributed in our sample. For this reason, we created a dichotomous moderator variable with relationship lengths less than or equal to 12 months and more than

12 months. In the first step, informant ratings of life-satisfaction (LS), relationship length (RL; less than or equal to 12 months = 0, above 12 months = 1), and dyad type (DT; dating = 0, friend = 1) were entered as predictors. In the second step, the product of standardized informant ratings of life-satisfaction and relationship length and the product of standardized informant ratings of life-satisfaction and relationship type were entered as predictors. In the first step, informant ratings of life-satisfaction ($\beta = .24$, 95% CI = .17|.32) and relationship type ($\beta = -.18$, 95% CI = -.24|-.13) were significant predictors. Relationship length was not a significant predictor ($\beta = -.02$, 95% CI = -.07|.04). In the second step, we added the interaction terms. Type of relationship did not moderate self-informant agreement ($\beta = .00$, 95% CI = -.10|.11). As predicted, relationship length was a significant moderator ($\beta = .19$, 95% CI = .06|.31). To clarify this interaction, we computed self-informant agreement for dyads with equal to or less than 1 year and more than 1 year of acquaintance. During the first year of a relationship, agreement is weak ($r = .10$, 95% CI = -.03|.23). In the following years, agreement is higher ($r = .32$, 95% CI = .24|.40). The effect size for this moderator effect is moderate ($q = .23$).

To test the non-linear function of acquaintanceship effects, we conducted a non-linear mixed model regression analysis using SAS9.2 (Wolfinger, 2007). Non-linear mixed models are able to estimate non-linear relationships between variables in the same way as non-linear regression models for data without a nested structure, but take the dependencies of nested variables into account. Like linear mixed models, mixed non-linear models could examine cross-level interactions, but our simple model only examined within-subject relationships. We merely used non-linear mixed modeling to obtain correct standard errors that take the interdependencies of dyadic data into account. Even non-linear modeling without nested data is rarely used in psychological research. As a result, we explain in more detail how and why we used a non-linear regression model. The rationale for our non-linear model was that agreement at zero-acquaintance has to be zero. That is, without knowing somebody, a rater has zero valid information about a targets' well-being and agreement is zero. This prediction may seem to contradict findings that people can make judgments of personality or even well-being at zero-acquaintance (Yeagley et al., 2007). However, in these studies, raters are provided with valid information in the form of videos or pictures. Thus, in these studies ratings are made without prior acquaintance based on minimal information, but this information would not be available under naturalistic conditions. In our study, raters could not have made accurate ratings without some degree of acquaintanceship. Thus, agreement has to start from a value of zero at the beginning of a relationship. Our next theoretical assumption was that agreement has a theoretical maximum at which agreement can no longer increase further. This follows from the fact that agreement could theoretically be perfect. Once agreement is perfect, it cannot increase further. Of course, for real data, it is unrealistic to assume that self and informant ratings reach perfect agreement even after an infinite amount of time. For this reason, our model allowed for a free parameter that estimates the actual level of maximal agreement. The second free parameter of our model specified the rate at which raters reach the maximal level of agreement. This could happen quickly if valid information about well-being is readily available, but it could be a relatively slow process if valid information is acquired only gradually during the process of establishing a closer relationship. We used a standard exponential function to estimate these two parameters.

$$\text{Self-LS} = \text{Inf-LS} * B_1 (1 - \text{EXP}(B_2 * \text{relationship length}))$$

In this formula, Self-LS and Inf-LS refers to the standardized self-ratings and informant ratings of life-satisfaction, B_1 refers to the parameter that estimates the asymptotic maximum agreement

and B_2 is an estimate of the rate at which relationship length increases agreement. The rate parameter can vary from 0 to $-\infty$. A value of zero implies that people do not acquire valid information. As a result, self-informant agreement remains zero even in relationships with long relationship length. With increasingly negative values, information is acquired more quickly and the theoretical maximum is reached after a shorter period of time. Once the two parameters are estimated, they can be used to plot the rate at which self-informant agreement increases with relationship length. Fitting this non-linear equation to the data produced the following results. The maximum level of agreement was estimated at $B_1 = .338$, $t(479) = 5.46$, $p < .05$, 95% CI = .216|.459. This estimate is consistent with meta-analytic findings that self-informant agreement in well-being judgments averages around .4 (Schneider & Schimmack, 2009). The rate parameter B_2 was estimated to be $-.068$, $t(479) = 2.13$, $p < .05$, 95% Confidence Interval = $-.131 | -.005$. The fact that this parameter was significantly different from zero shows that self-informant agreement increases with relationship length and is not already at its maximum level with minimal information. To provide information about the rate at which informants gain valid information about targets' life-satisfaction, we computed self-informant agreement over the first 3 years of acquaintanceship starting with zero for zero-acquaintance in 6 months intervals. The estimates were $r = .11$ for 6 months, $r = .19$ for 12 months, $r = .24$ for 18 months, $r = .27$ for 24 months, $r = .29$ for 30 months, and $r = .32$ for 36 months. That is, after 36 months (3 years), self-informant agreement has reached 90% of the maximum level that could theoretically be reached with infinite relationship length. Given the small difference between a value of $r = .32$ and the maximum value of $r = .34$, this finding suggests that after the first 3 years of a relationship further years of acquaintanceship produce negligible increases in self-informant agreement. We also examined whether the two parameters differed for friendship and dating pairs using a moderated regression approach, but interaction terms were not statistically significant.

4. Discussion

As expected, the study found significant self-informant agreement for life-satisfaction. There were also moderator effects of acquaintanceship length on self-informant agreement, such that agreement increased with relationship length. Agreement increases over the first 3 years of acquaintance non-linearly. In addition, friends and dating partners did not differ in their ability to provide informant ratings of life-satisfaction. This finding replicates prior findings with affective indicators of well-being (Watson et al., 2000).

4.1. Implications

Our findings about the maximum level of agreement and the rate at which informants' ratings approach the maximum provides valuable information for the selection of informants in studies that aim to use informant ratings of well-being to reduce the influence of rating biases, especially in studies that use self-ratings as predictors of well-being. In this case, failure to replicate findings across methods could reveal method artifacts in self-ratings or problems with the validity of the informant ratings. To minimize the latter possibility, it is important to maximize the validity of informant ratings, and our study suggests that informants should have known the target for a minimum of 3 years. Our results also suggest that beyond a period of 3 years, length of relationship does not ensure higher validity. As a result, we should not expect parents to be better informants than friends or dating partners, once the latter relationships have lasted more than 3 years. This finding is consistent

with the observation that parents are not much better informants on their children's well-being than friends (Schneider & Schimmack, 2009).

Our findings also have implications for process models of self-informant agreement. Some personality characteristics can be judged with surprising accuracy based on minimal information (Borkenau & Liebler, 1992). Our finding of a gradual increase in self-informant agreement suggests that life-satisfaction is different. One explanation for the low initial agreement is the private nature of life-satisfaction. Life-satisfaction is a global cognitive evaluation that is not readily visible in people's behavior. Weak agreement in zero-acquaintanceship studies may be based on salient personality characteristics that predict life-satisfaction (Yeagley et al., 2007). For example, self-informant agreement in extraversion could produce self-informant agreement in life-satisfaction judgments because extraversion predicts life-satisfaction, but agreement would be rather low. Over time, individuals may shift to less salient, yet more valid information about satisfaction with specific life domains. Schneider and Schimmack (submitted for publication) found that satisfaction with important life domains such as family, academic life, and health explained self-informant agreement in global life-satisfaction judgments. The present results suggest that informants acquire information about satisfaction in these life domains gradually, whereas information about personality traits may be acquired more quickly based on observations of behavior. Comparisons of the rate at which individuals acquire knowledge about others for different characteristics should be examined in future research.

Another important finding is that self-informant agreement reaches a relatively modest maximum in the .3 and .4 range. It is possible that other moderator variables may reveal higher agreement for some informants. However, it is also possible that this estimate approaches the upper limit of the validity of well-being ratings by a single rater. Indeed, even self-informant agreement for ratings of visible personality characteristics like extraversion is not much higher (Connolly et al., 2007). This suggests that systematic measurement error makes a substantial contribution to life-satisfaction ratings by a single rater. To increase the validity of life-satisfaction measures, researchers should rely on multiple raters (Walker & Schimmack, 2008) or identify and control rating biases in ratings made by a single rater (Schimmack et al., 2008).

4.2. Limitations

One limitation of our study is the reliance on life-satisfaction as the sole well-being indicator. Future studies should include a broader range of well-being indicators. Acquaintanceship may be a weaker moderator of affect ratings because prior studies failed to detect acquaintanceship effects, and self-informant agreement tends to be weaker even with well-acquainted informants (Schneider & Schimmack, 2009). It is possible that self-informant agreement for affect measures plateaus earlier because informants rely on non-verbal cues of emotion expression. These cues can produce some agreement with minimal acquaintanceship but may be relatively poor indicators of individuals' typical level of affect. Future studies of the acquaintanceship effect should compare the rate at which self-informant agreement increases for different personality characteristics. Self-informant agreement should increase faster for more observable characteristics (Funder, 1995).

Another limitation of our study is that our estimate of the maximum level of self-informant agreement is slightly lower than in previous studies (Schneider & Schimmack, 2009). One possible explanation for this finding is that family members may be slightly more accurate informants than friends or dating partners. Future research needs to test this hypothesis by including parents as informants. Another explanation could be that participants in our

study completed ratings independently in the laboratory. In contrast, many previous studies relied on mailed questionnaires. Mailed informant ratings may share method variance if the ratings are not made independently. However, the small discrepancy would imply that this potential problem of mailed informant ratings has a weak effect and that self-informant agreement can be obtained even if reports are made independently. Thus, our results strengthen the evidence that informant ratings of life-satisfaction are a useful measure that can complement self-ratings of life-satisfaction to control for systematic measurement error in self-ratings.

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