Extraverts categorize their daily experiences by specific social relationships

William Tov & Kelly Koh

Singapore Management University

Author Note

William Tov and Kelly Koh, School of Social Sciences, Singapore Management University.

Correspondence concerning this article should be sent to Will Tov, School of Social Sciences, Singapore Management University, 90 Stamford Road, Level 4, Singapore 178903, Republic of Singapore. Email: williamtov@smu.edu.sg.

Abstract

How an event is categorized may reflect the constructs that are cognitively accessible to a person. The present study examined whether extraverts categorized their daily experiences by general sociality (social versus nonsocial), specific relationships, valence, and academics/leisure. After reporting events during a one-month diary study, participants sorted their events into meaningful groupings. Extraverts tended to categorize their events by sociality and more specifically by the nature of their relationships with others. No other effects were found. Thus, what may be salient to extraverts is not just the time they spend socializing, but whom they are socializing with. This finding suggests the need to move beyond affiliation to study more specific social motives that extraverts may pursue.

Keywords: extraversion, daily experience, categorization, social relationships, personality, cognitive accessibility

1. Introduction

A story from *The Wall Street Journal* describes the marriage of an extraverted husband and an introverted wife. As with many relationships, the couple resolves their conflicts through compromise:

> It took two decades, they say, but they finally learned to cope with their vastly different styles…Mr. Weber goes to a happy hour after work one night a week without his wife. They also spend every Saturday apart. He meets pals early at Starbucks, stops in at another coffee shop mid-morning to say hi to more friends and gathers a crowd at a local pub for lunch. [Ms. Weber] stays home and reads, calls her parents, catches up on email and walks the dog. (Bernstein, 2011)

The everyday experiences of Mr. and Ms. Weber can be compared and contrasted in any number of ways. Both of them work but also find time for leisure. Presumably, some of these experiences are pleasant, others are unpleasant. The most obvious contrast, of course, is that Mr. Weber, the extravert, spends much more time socializing than Ms. Weber, the introvert. However, one other aspect of Mr. Weber's social life deserves attention. Beyond the amount of time he spends with others is the particular way that he does so. Mr. Weber socializes separately with distinct groups of people: work colleagues, various friends, and at some point—one hopes—his wife.

If we asked Mr. and Ms. Weber to reflect on their everyday lives, we might find that one person emphasizes certain themes and features more than the other person. For example, Mr. Weber might focus more on the social aspects of his experiences than Ms. Weber. Not only might he be more sensitive to the contrast between socializing and not socializing, he might further subcategorize his experiences according to his relationships with different groups of

people. For Ms. Weber, on the other hand, such categories might be less relevant for her own experiences, which are less varied with regard to the people she interacts with. The Webers illustrate the possibility that personality traits influence the types of experiences people have, and this in turn shapes the categories or features of events that are chronically accessible in memory.

In the present study, we examined the relation between extraversion and the categorization of daily events. Participants reported their experiences during a one-month diary study. At the end of the study, they were instructed to sort the events they reported into meaningful groups. This task was fairly unstructured to allow for the expression of individual differences in grouping events. We then examined whether participants' level of extraversion was systematically related to the categories by which they grouped events. As we discuss below, such categories may suggest the features of events that extraverts find most relevant for interpreting and anticipating their experiences.

1.1. Category Accessibility as an Individual Difference

Because a single event reflects several themes and features, it can often be categorized in more than one way. A study session with friends could be construed as an academic event, an opportunity for social bonding, or simply a pleasant experience. The decision to categorize an event in one way and not another may reflect a person's predominant concerns, which are often related to their personality traits and motives. At the very least, such decisions may reveal the constructs that are cognitively accessible in the everyday life of the person (Higgins, 1996, 2000). Constructs or categories that are more accessible (i.e., readily brought to mind) are more likely to be applied to stimuli than those that are less accessible.

According to Bruner (1957), the relative accessibility of some categories over others serves two important functions: prediction and goal attainment. First, when certain classes of

events occur more frequently than others, the categories associated with those events will be more accessible to the person. For example, if extraverts socialize more than introverts, those categories that are relevant for identifying and interpreting social experiences should be more accessible. This would help extraverts more accurately predict the course of social interactions and adjust their behavior accordingly. Thus, the link between event frequency and category accessibility is functional (Higgins, 2000). The categories that are most accessible tend to be the ones that aid in the comprehension and prediction of frequently occurring experiences. A similar view was proposed by George Kelly (2003) in his development of personal construct theory.

A second function of category accessibility is to facilitate goal attainment. Category knowledge that is relevant to a person's needs and goals should be more accessible than that which is not (Bruner, 1957; Förster, Liberman, & Higgins, 2005). Category accessibility facilitates goal pursuit by increasing the detection of goal-relevant stimuli and preparing goal-relevant behavior. Thus, if extraverts desire social interactions more than introverts, categories that are relevant in their pursuit of such experiences should be more accessible. This might include knowledge of potential interaction partners (e.g., friends versus family) and the types of interactions one has with them.

In summary, category accessibility may be a reflection of one's daily experiences as well as the goals one pursues in everyday life. Extraverts frequently engage in social activity (Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011; Lucas, Le, & Dyrenforth, 2008) and tend to express a desire for affiliation (King & Broyles, 1997). When extraverts are alone, they are more likely than introverts to feel like the situation is imposed on them and not an experience they chose to be in (Emmons, Diener, & Larsen, 1986). The aberrance of solitary moments may be as salient to extraverts as the time spent with others. This suggests that the contrast between

social and nonsocial experiences is more cognitively accessible for extraverts than introverts. Although this is a fairly intuitive hypothesis, recent work also implies that the social life of extraverts is more variegated than typically acknowledged. For example, extraverts do not merely have more friends (Gosling et al., 2011; Selfhout et al., 2010), they also belong to a greater number of social networks (Gosling et al., 2011), suggesting that their social contacts are clustered into distinct subgroups. The social motives associated with state extraversion are also diverse and include dominance, connecting with others, and having fun (McCabe & Fleeson, 2012). Because mean levels of personality states correlate with their corresponding traits (Fleeson & Gallagher, 2009), this finding may suggest that extraverts pursue a variety of social motives. However, it is unlikely that any single relationship (e.g., a best friend) fulfills all these motives. Instead, interactions with classmates may provide an opportunity to lead, while socializing with friends provides connection and enjoyment. If extraverts have several social motives that are each met by different segments of their social network, it would benefit them to attend to the distinct relationships they have with others. Behavioral norms and expectations differ across relationships with family, friends, and romantic partners (Canary, Cupach, & Messman, 1995). Thus, greater accessibility of specific relationship categories would help extraverts to anticipate and coordinate their everyday social interactions.

1.2. Other Themes and Categories of Daily Experience

In addition to the social aspects of an event, its hedonic impact or valence may also be salient to extraverts. Research has highlighted the tendency for extraverts to attend more to pleasant than to unpleasant stimuli (Derryberry & Reed, 1994). Extraverts also anticipate greater happiness than introverts in pleasant situations—even when no social interaction is involved (Lucas & Diener, 2001). If extraverts selectively attend to and seek out pleasant experiences,

they may be more likely than introverts to identify and categorize events by valence. Though plausible, recent studies cast doubt on the view that extraversion is simply a predilection for pleasant stimuli. Differences between extraverts and introverts were found only when pleasant stimuli contained elements of goal-pursuit (Smillie, Cooper, Wilt, & Revelle, 2012; Smillie, Geaney, Wilt, Cooper, & Revelle, 2013). Thus the extent to which valence is a more accessible category for extraverts than introverts remains an open question. We note also that extraverts may attend to both the valence and sociality of their experiences. Extraverts tend to emphasize both communal themes (McAdams et al., 2004) and positive emotion (Raggatt, 2006) when discussing important experiences or aspects of their lives. Our methodology (described below) allows for this possibility as well.

Another distinction that looms large in daily life is that between work and leisure (Csikszentmihalyi & LeFevre, 1989). Events in these two domains generally occur in different settings and with different groups of people. It would therefore be natural to distinguish experiences at work from those that are spent with friends and family. This last point is important because the tendency to categorize experiences into "work" versus "play" could masquerade as the tendency to categorize experiences by specific relationships (e.g., classmates versus friends and family). Thus, what appears to be greater accessibility of socially-relevant categories among extraverts might actually be greater attention to specific types of settings and activities. To examine this possibility, we quantified the extent to which participants categorized events in terms of their relevance to academics and leisure.

1.3. Event Sorting Task

Participants in our study reported positive and negative events for one-month. For each event, participants indicated the valence, the people they interacted with, and whether they

considered the event to be a leisure or academic activity. At the end of the diary period,

participants were instructed to sort their events into meaningful groups. For each participant,

these groupings can be combined with another variable (e.g., valence) to form a two-way

contingency table. Thus, for a participant who creates four groups, the number of positive and

negative events in each group could be depicted in a 4 x 2 contingency table with four rows (one

for each group) and two columns (one for each valence). The distribution of five types of

relationship targets (family, friends, romantic partner, other, and none) across the four groups

would be depicted in a 4 x 5 contingency table. The degree to which events are sorted by

different categories can be estimated for each participant by computing Cramér's *V,* a measure of

association between two nominal variables (Hays, 1994, p. 869):

$$V = \sqrt{\frac{\varphi^2}{L-1}}$$

Cramér's *V* is a function of phi (φ), another commonly used measure of association between

nominal variables, and *L*, which is the lesser of the number of rows and columns. Although φ

has been used in previous sorting paradigms (e.g., Showers, 1992), it is not standardized for

tables greater than 2 x 2 (Hays, 1994) and may exceed 1 in these cases. In the present study, this

was undesirable because many participants had contingency tables with more than two rows and

columns. In contrast, *V* ranges from 0 to 1 regardless of the number of columns or rows.

        To illustrate the use of Cramér's *V* in the event sorting task, we constructed three sortings

of events into four groups (*Figure 1*). These events varied in valence and social interaction. In

panel A, each group contains an equal mix of positive and negative events. The degree of

sorting by valence is thus, $V_{Valence} = 0$, which indicates no association between valence and

grouping. In contrast, interactions with family, friends, and romantic partner were each sorted

into separate groups as were nonsocial events. Because events are perfectly sorted by

relationships, $V_{Relationship} = 1.0$. In this case, the events are also perfectly sorted by general

sociality ($V_{Sociality} = 1.0$) because there are no groupings containing a mix of social and nonsocial

events. In panel B, events are perfectly sorted by both valence and general sociality, but less so

by relationships ($V_{Relationship} = .58$).   Note that $V_{Relationship}$ is non-zero because nonsocial events are

still separated into distinct groups. Panel B illustrates the possibility that participants can

categorize their events by both valence and sociality. In panel C, there is a greater degree of

sorting by relationships but sorting by general sociality is low ($V_{Sociality} = .17$) because nonsocial

events are intermixed with relationship specific groupings. In the present study this sometimes

occurred when participants grouped academic events together and these events involved studying

alone (nonsocial) as well as working on group projects (interacting with classmates). This raises

the possibility that events may be categorized by specific activities (work, play, neither) and

highlights the potential overlap between relationship and activity categories. As these examples

show, events can be categorized in more than one way and the degree to which certain categories

are used can be quantified (by V) and subsequently correlated with personality variables.

2. Method

2.1 Participants

        One hundred and ninety-six students at Singapore Management University signed-up for

a one-month diary study and were paid a maximum of SGD$33. Of the original sample, nine

students failed to complete the study. We also excluded 11 students who completed three or less

(out of 8 possible) surveys. The final sample consisted of 176 students (90% of the original

sample). The sample was predominantly female (67%), ethnically Chinese (64%), and born in

Singapore (56%). Other ethnicities included Vietnamese (13%) and Indian (16%). The average

age of the sample was 21.6 years (*SD* = 1.69). Students who were excluded from analyses did

not differ in extraversion from those who were included (*t*'s < 1).

2.2. Materials

2.2.1. International Personality Item Pool (IPIP) Extraversion

        The IPIP Big Five Factor Markers

(http://ipip.ori.org/newBigFive5broadKey.htm#Extraversion) consists of 50 items measuring the

Big Five traits. In the present study, we focus only on the ten extraversion items (e.g., "Am the

life of the party"). Items were rated from 1 (*very inaccurate*) to 5 (*very accurate*). Alpha

reliability was .89.

2.2.2. California Q-Set (CQ) Extraversion

        The California Q-Set (Block, 1961) consists of 101 behavioral descriptions. A factor

analysis of Q-Set ratings (McCrae, Costa, & Busch, 1986) identified 22 items that loaded onto an

extraversion factor (e.g. "Emphasizes being with others; gregarious"). Items were rated from 1

(*extremely uncharacteristic*) to 7 (*extremely characteristic*). Alpha reliability for the

extraversion items was .80.

2.2.3. Diary survey

        Each diary survey consisted of several questions about participants' recent experiences.

Of primary relevance for the current study, participants reported two positive events and two

negative events that occurred during the past few days. For each event, participants then

answered a series of yes-no questions. They reported whether the event involved interacting

with family, friends, a romantic partner/interest, classmates, and other people. In two separate

items, they also reported whether the event was leisure-related and whether it was academic-

related. Diary surveys were completed twice a week every Wednesday and Sunday. On

Wednesdays, participants reported events that occurred from Sunday through Tuesday. On

Sundays, they reported events that occurred from Wednesday through Saturday. Out of a

maximum of eight diary surveys (2 surveys x 4 weeks), participants completed 7.12 surveys and

reported 28.13 events. A total of 5,008 events was collected.

2.3. Procedure

The study consisted of three phases and was part of a larger project on well-being and

memory. In Phase 1, participants completed a one-hour survey that included the full IPIP and

CQ inventories as well as various scales assessing well-being and emotional experiences. In

Phase 2, participants began the diary portion of the study. Twice a week for four weeks, they

logged into a website to complete the diary survey. In Phase 3, approximately one week later,

participants attended a final laboratory session which involved several computerized tasks. For

each participant, all events reported in Phase 2 were imported into a spreadsheet, with each event

appearing in a textbox. Participants then followed a set of on-screen instructions describing the

event sorting task. They were told to group together events that they perceived to be related "in

any way that makes sense to you". Thus, participants had to define for themselves the

meaningful categories within which to place their events. The instructions further explained that

each group had to consist of at least two events. If an event could not be placed into a group,

participants were told to drag the event into a separate area of the spreadsheet for unsorted

events. To further clarify the groupings they had made, participants gave each group of events a

brief title. A research assistant then examined each participant's spreadsheet and identified the

events that were grouped together. For the purposes of this task, each event was assigned a

unique number enabling us to match the grouping data with other features of the event collected

in Phase 2 (e.g., valence).

2.4. Data coding and bias-correction

For each participant, we computed four indices of Cramér's *V* measuring the degree of sorting by (i) valence (positive or negative); (ii) general sociality (social event or nonsocial event); (iii) relationships (family, friends, romantic partner/interest, other, or nonsocial event); and (iv) academics/leisure (academic event, leisure event, or neither). For the general sociality variable, an event was coded as social if it involved interacting with another person and nonsocial if no other person was involved. For the relationships variable, it was necessary to develop coding rules because Cramér's *V* can only be applied to nominal variables that are defined by mutually exclusive categories. First, we combined classmates and "other" into a single category because we observed a tendency for both to co-occur. For example, classroom experiences often involved interacting with both classmates *and* an "other" person (e.g., a professor or teaching assistant). Second, when participants reported an event that involved interacting with (1) a person from the close-other category (i.e., family, friend, or romantic partner) *and* (2) a person from the other-category, we assigned priority to the close-other category. For example, going to a concert with friends might involve interacting with event staff and other concert-goers. In this case, we assumed that the more meaningful interaction involved one's friends and therefore coded this event as a "friend event". This rule was implemented when there was overlap between the other-category and only *one* of the close-other categories. When multiple close-others were involved (e.g., friends *and* family), it was difficult to decide which relationship to assign priority. Therefore, we excluded such events when computing $V_{Relationship}$.[1]

---

[1] Events involving multiple close-others constituted a minority (11.2%) of participants' events. We also computed *V* with multiple close-others coded as a separate category. We found that *V* was significantly lower with this additional category than without it (.66 vs .70), $t(175) = 7.83$, $p < .001$. Thus events involving multiple close-others tended not to be grouped together but instead assigned to different categories. Finally, composite extraversion did not correlate with the proportion of multiple close-other events.

Similarly, when coding events as academic- versus leisure-related, we excluded a small

percentage (5.1%) of events that were coded as both academic and leisure events.[2]

Although we eliminated participants who completed few surveys, the total number of

events sorted by participants ranged from 11 to 32. This variability in the number of events and

size of the two-way contingency tables across participants may introduce biases in Cramér's *V*

that make it difficult to compare this statistic across individuals. Therefore, we applied a bias

correction formula (Bergsma, 2013) and present results using both the unadjusted and bias-

corrected estimates of *V*.

3. Results

3.1. Event content

The mean proportion of events in various categories was as follows: positive (50%),

family (16%), friends (37%), romantic partner/interest (17%), classmates (25%), other people

(23%), leisure (38%), and academics (38%). The majority of events (73%) involved social

interactions with at least one person. Extraverts tended to report less events involving family

interactions, r's = -.16 and -.15, respectively for IPIP and CQ measures, p's < .05. Overall,

extraverts did not report significantly more social events than introverts, nor did they report more

leisure or academic events.

3.2. Degree of sorting by event variables

On average, 2.9 events (out of 28.13) could not be sorted. Thus, participants were able to

categorize the vast majority of their events (89.7%). The mean number of groupings was 5.66.

Sorting by relationships was correlated with sorting by sociality (Table 1). This is not surprising

---

[2] We also considered "academic and leisure" events as a separate category. *V* was significantly lower with this additional category than without it (.69 vs .74), $t(175) = 7.38$, $p < .001$. Thus, events that were both academic- and leisure-related tended not to be grouped together. We also examined separate *V*s for academic (versus non-academic) and leisure (versus non-leisure) categories. Composite extraversion did not correlate with either V_{Academic} ($r = .13$, $p = .10$) or V_{Leisure} ($r = .14$, $p = .07$).

given that the latter subsumes the former. As we anticipated, sorting by relationships also correlated with sorting by academics/leisure. Participants who distinguished interactions with classmates from those with close others would tend to have higher Vs for both relationship and academics/leisure. Table 2 presents the mean V's for each category. The sample size was lower for sociality because six participants did not report any nonsocial events, and thus V could not be computed for them. Participants tended to sort events by academics/leisure to a greater degree than any other variable (p's < .01). In contrast, sorting by general sociality was significantly lower than all other variables except valence (p's < .001).

Bias-corrected V's were notably lower than the unadjusted V's. This is due to the tendency for V to be overestimated when sample sizes (in this case, the number of events) are small (Bergsma, 2013). We also examined the effects of bias-correction on between-subjects variation in the Vs by computing the intraclass correlation coefficient. The four Vs were treated as nested within participants. Between-subjects differences accounted for 15% of the variation in unadjusted Vs but only 6% of the variation in bias-corrected Vs. The latter reduction is likely due to the removal of variation from some participants having more groupings (hence, larger contingency tables) than others. Nevertheless, results were similar whether the unadjusted or bias-corrected V's were used. In addition, the bias-corrected analysis suggested that events were categorized by specific relationships to a greater degree than valence (p < .001). Overall, the distinction between academic and leisure events loomed large in our sample of college students. Social events were also distinctive but primarily in terms of specific relationships and not merely because social interaction was involved.

3.3 Extraversion and categorization tendencies

On average, participants were slightly extraverted (IPIP: $M = 3.08$, $SD = 0.80$; CQ: $M = 4.74$, $SD = 0.63$). Both extraversion measures were strongly correlated ($r = .75$, $p < .001$). Therefore, we created a composite measure by averaging the scores on IPIP and CQ extraversion after both were rescaled to range from 0 to 100 ($M = 57.20$, $SD = 14.42$). Extraversion was not significantly related to sorting by either valence or academics/leisure (Table 2). Instead, extraverts tended to sort their daily events by general sociality and specific relationships. Tests of dependent correlations (T2; Steiger, 1980) revealed that composite extraversion correlated more strongly with $V_{Sociality}$ and $V_{Relationships}$ than with $V_{Valence}$ (t's > 2.20, p's $< .03$) but not $V_{Academics/Leisure}$ (p's $> .22$). This was true for both the unadjusted and bias-corrected Vs. Interestingly, the tendency for extraverts to sort by relationships was somewhat more consistent than the tendency to sort by general sociality, although the difference between the two correlations was not significant (p's $> .27$). We also corrected the p-values for multiple tests using the Holm-Šidák sequential procedure (Abdi, 2010). The eight correlations between the unadjusted Vs and the two extraversion measures were treated as a family of independent tests.[3] After correction, $V_{Relationship}$ remained significantly correlated with IPIP and CQ extraversion (adjusted p's $< .03$). When we repeated the procedure on the bias-corrected Vs, $V_{Relationship}$ remained significantly correlated with IPIP but not CQ extraversion (adjusted p's $= .02$ and .08, respectively). No other correlations were significant.

Because $V_{Relationship}$ is partly affected by the grouping of nonsocial events (see Figure 1, panel B), we conducted another set of analyses excluding the nonsocial events and recomputing $V_{Relationship}$. Two participants were left with only one row or column after excluding the nonsocial events and thus, V could not be computed for them. Despite the reduced number of events,

---

[3] Strictly speaking, the tests are not independent because IPIP and CQ extraversion are strongly correlated with each other. In this case, the sequential procedure yields conservative estimates (Abdi, 2010).

composite extraversion correlated with both unadjusted and bias-corrected $V_{Relationship}$, $r(172)$'s = .16, and .17, p's < .05. Thus, even when the analyses were limited to events that involve social interactions, extraverts tended to further subcategorize these experiences according to their relationships with others.

Finally, we examined whether the relation between composite extraversion and sorting was affected by either gender or the number of events provided by participants. No moderating effects were observed. However, after controlling for gender, extraversion correlated positively with unadjusted (but not bias-corrected) $V_{Academic/Leisure}$. No other correlations were significantly altered after controlling for gender and number of events.

4. Discussion

When extraverts reflected upon their daily experiences, they tended to create clusters of events organized by their relationships with people. What appears to be salient to extraverts is not merely the time they are and are not interacting with others, but whom they are interacting with as well. This tendency to categorize events by relationships was specific to the persons involved and not merely a function of different settings or activities. Extraverts were not significantly more likely than introverts to distinguish academic experiences from leisure experiences. These findings suggest that relationship categories (family, friends, etc.) may be more cognitively accessible for extraverts than introverts. Drawing on theory from social cognition (Bruner, 1957; Higgins, 2000), the greater accessibility of relationship categories may help extraverts better coordinate their social life—one that is arguably more complex than introverts'. As we noted earlier, extraverts may pursue a wide array of social motives and each relationship may enable them to fulfill these motives to varying degrees. In that case, it might be more informative for extraverts to attend to the nature of their relationships with specific people

than to simply process their experience as one that is either social or nonsocial. To return to Mr. Weber, his Saturday get-togethers with three groups of people may satisfy more than the basic need to affiliate with others. He may tell a lot of jokes in the first group, enjoy stimulating conversation in the second, and act as more of a leader and organizer in the third. Thus the tendency for extraverts to sort their experiences by relationship categories may be closely linked to the different motives they pursue across relationships.

4.1. Limitations

Interestingly, extraverts did not necessarily report more social events than introverts overall. This is puzzling given that frequent socializing by extraverts was posited to increase the accessibility of socially-relevant categories. Given the collectivist cultural context of our sample, it may be quite difficult for students to avoid social interactions in general. Moreover, Emmons et al. (1986) similarly found that extraversion did not correlate with time spent in all social situations. Instead, extraverts spent more time in social situations they chose to be in, and less time in social situations that were imposed on them. Unfortunately, we are unable to distinguish which situations were imposed and which were chosen in the current study. This distinction might clarify the nonsignificant relation that we observed between extraversion and frequency of social events. Chosen social situations may also be more likely to fulfill the various social motives that extraverts pursue.

Extraversion did not correlate with the tendency to categorize experiences by valence. Instead, extraverts were significantly more likely to sort by relationships and sociality than valence. Though this would seem to support other studies qualifying the link between extraversion and sensitivity to pleasant stimuli (e.g., Smillie et al., 2012), we would caution against drawing strong conclusions from the present study. First, extraversion may be

specifically associated with the pursuit rather than enjoyment of rewarding stimuli (Smillie,

2013). In contrast, because the positive events in our study were reported retrospectively, they

may be more likely to reflect the enjoyment rather than pursuit of rewards. Goal pursuit itself

can result in either a positive or negative outcome depending on how successful one is. Second,

participants were required to report an even number of positive and negative events. It is

unknown how this could have affected participants' sorting decisions. Had we allowed

participants to report any number of valenced events, we might find that extraverts report very

few unpleasant events and these might then be grouped together. Third, although we used two

measures of extraversion, the content of both scales tended to emphasize sociability more than

other aspects such as positive emotionality. This could explain why the relation between

extraversion and $V_{Relationship}$ was fairly robust. Replication with facet-level measures of

extraversion could clarify the current findings as well as identify additional categories that are

cognitively accessible to extraverts.

Although we have emphasized that extraversion correlated more consistently with

$V_{Relationship}$ than either $V_{Sociality}$ and $V_{Academic/Leisure}$, the former correlation did not differ

significantly from the latter two. Though our sample size ($N = 176$) was sufficient for detecting

correlations between .20 and .30, it was insufficient for detecting *differences* between

correlations of small to moderate sizes. For example, with $r_{23} = .45$ (akin to the correlation

between corrected $V_{Relationship}$ and $V_{Sociality}$), a sample of 3,306 is required to detect a difference

between two dependent correlations of $r_{12} = .20$ and $r_{13} = .15$ (assuming alpha = .05 and desired

power = .80; Faul, Erdfelder, Buchner, & Lang, 2009). Nevertheless, it should be noted that the

categories of sociality and academic/leisure are both superordinate to the relationship categories.

This means that sorting by specific relationships will tend to increase both $V_{Sociality}$ (as distinct

clusters of social events are formed) and $V_{Academic/Leisure}$ (as social interactions with classmates are separated from those involving friends and family). However, the converse is not true. Sorting by either sociality or academic/leisure does not necessarily imply sorting by specific relationships. One could group all social or leisure experiences (with family, friends, and romantic partner) together, resulting in a lower $V_{Relationship}$. In light of this possibility, it is noteworthy that extraverts tended to rely on more specific relationship categories when broader levels of categorization were possible. Recall that there were few constraints on the number of groupings that participants could create.

Finally, like Bruner (1957), we have argued that the decision to categorize an event in a particular manner reflects cognitive accessibility. The categories by which participants sorted their events are likely to be the same categories that are frequently activated by and applied to their everyday ongoing experiences. Nevertheless, the event-sorting task involves retrospection of past events which can differ from online perceptions (Oishi, 2002). Experience sampling studies could more directly test the categories that people use *in vivo*. For example, participants could assign events to various groups as they are reported. Such an approach might also reveal how groupings change or remain stable over time.

4.2. Conclusion

Using an innovative event sorting task, the present findings provoke new questions about the cognitive and motivational processes that shape the expression of extraversion. The tendency for extraverts to categorize their experience not merely by sociality but by specific relationships offers a nuanced perspective on one of the most fundamental personality traits. That extraverts socialize frequently and maintain a large social network is commonly understood as reflecting their preference to be with others. However, the subdivision of their social experiences into the

specific groups of people they interact with suggest that there may be more to extraverted

sociability than the need for affiliation. Other motives such as intimacy (McAdams &

Constantian, 1983) or dominance (McCabe & Fleeson, 2012) could be pursued within distinct

subsets of their social network. We hope future researchers attend more to the variety of social

motives pursued by extraverts and how they are fulfilled. The relationship context may affect

how such goals are met as well.

Abdi, H. (2010). Holm's sequential Bonferroni procedure. In N. Salkind (Ed.), *Encyclopedia of research design* (pp. 574–578). Thousand Oaks, CA: Sage Publications.

Bergsma, W. (2013). A bias-correction for Cramér's V and Tschuprow's T. *Journal of the Korean Statistical Society*, *42*, 323–328.

Bernstein, E. (2011, June 28). When innies love outies: How odd couples cope. *The Wall Street Journal*. Retrieved from http://online.wsj.com/news/articles/SB10001424052702304314404576411640141999396

Block, J. (1961). *The Q-sort method in personality assessment and psychiatric research.* Springfield, IL: Charles C Thomas.

Bruner, J. S. (1957). On perceptual readiness. *Psychological Review*, *64*, 123–152. doi:10.1037/h0043805

Canary, D. J., Cupach, W. R., & Messman, S. J. (1995). *Relationship conflict: Conflict in parent–child, friendship, and romantic relationships.* Thousand Oaks, CA: Sage Publications.

Csikszentmihalyi, M., & LeFevre, J. (1989). Optimal experience in work and leisure. *Journal of Personality and Social Psychology*, *56*, 815–822. doi:10.1037/0022-3514.56.5.815

Derryberry, D., & Reed, M. A. (1994). Temperament and attention: Orienting toward and away from positive and negative signals. *Journal of Personality and Social Psychology*, *66*, 1128–1139. doi:10.1037/0022-3514.66.6.1128

Emmons, R. A., Diener, E., & Larsen, R. J. (1986). Choice and avoidance of everyday situations and affect congruence: Two models of reciprocal interactionism. *Journal of Personality and Social Psychology*, *51*, 815–826.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using

      G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*,

      41, 1149–1160. doi:10.3758/BRM.41.4.1149

Fleeson, W., & Gallagher, P. (2009). The implications of Big Five standing for the distribution

      of trait manifestation in behavior: Fifteen experience-sampling studies and a meta-

      analysis. *Journal of Personality and Social Psychology*, *97*, 1097–1114.

      doi:10.1037/a0016786

Förster, J., Liberman, N., & Higgins, E. T. (2005). Accessibility from active and fulfilled goals.

      Journal of Experimental Social Psychology, *41*, 220–239. doi:10.1016/j.jesp.2004.06.009

Gosling, S. D., Augustine, A. A., Vazire, S., Holtzman, N., & Gaddis, S. (2011). Manifestations

      of personality in online social networks: Self-reported Facebook-related behaviors and

      observable profile information. *Cyberpsychology, Behavior, and Social Networking*, *14*,

      483–488. doi:10.1089/cyber.2010.0087

Hays, W. L. (1994). *Statistics* (5th ed.). Belmont, CA: Wadsworth.

Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T.

      Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles*

      (pp. 133–168). New York, NY: Guilford Press.

Higgins, E. T. (2000). Social cognition: Learning about what matters in the social world.

      European Journal of Social Psychology, *30*, 3–39. doi:10.1002/(SICI)1099-

      0992(200001/02)30:1<3::AID-EJSP987>3.0.CO;2-I

Kelly, G. A. (2003). A brief introduction to personal construct theory. In F. Fransella (Ed.),

      International handbook of personal construct psychology (pp. 3–20). New York, NY:

      John Wiley & Sons.

King, L. A., & Broyles, S. J. (1997). Wishes, gender, personality, and well-being. *Journal of Personality*, *65*, 49–76. doi:10.1111/j.1467-6494.1997.tb00529.x

Lucas, R. E., & Diener, E. (2001). Understanding extraverts' enjoyment of social situations: The importance of pleasantness. *Journal of Personality and Social Psychology*, *81*, 343–356. doi:10.1037/0022-3514.81.2.343

Lucas, R. E., Le, K., & Dyrenforth, P. S. (2008). Explaining the extraversion/positive affect relation: Sociability cannot account for extraverts' greater happiness. *Journal of Personality*, *76*, 385–414. doi:10.1111/j.1467-6494.2008.00490.x

McAdams, D. P., Anyidoho, N. A., Brown, C., Huang, Y. T., Kaplan, B., & Machado, M. A. (2004). Traits and stories: Links between dispositional and narrative features of personality. *Journal of Personality*, *72*, 761–784. doi:10.1111/j.0022-3506.2004.00279.x

McAdams, D. P., & Constantian, C. A. (1983). Intimacy and affiliation motives in daily living: An experience sampling analysis. *Journal of Personality and Social Psychology*, *45*, 851–861. doi:10.1037/0022-3514.45.4.851

McCabe, K. O., & Fleeson, W. (2012). What is extraversion for? Integrating trait and motivational perspectives and identifying the purpose of extraversion. *Psychological Science*, *23*, 1498–1505. doi:10.1177/0956797612444904

McCrae, R. R., Costa, P. T., Jr., & Busch, C. M. (1986). Evaluating comprehensiveness in personality systems: The California Q-Set and the Five-Factor Model. *Journal of Personality*, *54*, 430–446. doi:10.1111/j.1467-6494.1986.tb00403.x

Oishi, S. (2002). The experiencing and remembering of well-being: A cross-cultural analysis. *Personality and Social Psychology Bulletin*, *28*, 1398–1406. doi:10.1177/014616702236871

Raggatt, P. (2006). Putting the Five-Factor Model into context: Evidence linking Big Five traits

      to narrative identity. *Journal of Personality*, *74*, 1321–1347. doi:10.1111/j.1467-

      6494.2006.00411.x

Selfhout, M., Burk, W., Branje, S., Denissen, J., van Aken, M., & Meeus, W. (2010). Emerging

      late adolescent friendship networks and Big Five personality traits: A social network

      approach. *Journal of Personality*, *78*, 509–538. doi:10.1111/j.1467-6494.2010.00625.x

Showers, C. (1992). Compartmentalization of positive and negative self-knowledge: Keeping

      bad apples out of the bunch. *Journal of Personality and Social Psychology*, *62*, 1036–

      1049. doi:10.1037/0022-3514.62.6.1036

Smillie, L. D. (2013). Why does it feel good to act like an extravert? *Social and Personality*

      Psychology Compass, *7*, 878–887. doi:10.1111/spc3.12077

Smillie, L. D., Cooper, A. J., Wilt, J., & Revelle, W. (2012). Do extraverts get more bang for the

      buck? Refining the affective-reactivity hypothesis of extraversion. *Journal of Personality*

      and Social Psychology, *103*, 306–326. doi:10.1037/a0028372

Smillie, L. D., Geaney, J. T., Wilt, J., Cooper, A. J., & Revelle, W. (2013). Aspects of

      extraversion are unrelated to pleasant affective-reactivity: Further examination of the

      affective-reactivity hypothesis. *Journal of Research in Personality*, *47*, 580–587.

      doi:10.1016/j.jrp.2013.04.008

Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological*

      Bulletin, *87*, 245–251. doi:10.1037/0033-2909.87.2.245

Table 1

Correlation among Degree of Sorting (Cramér's V) by Various Categories

Variable	1	2	3	4
1. Valence	--	.09	-.07	-.10
2. Sociality	.22*	--	.45*	.05
3. Relationship	.06	.51*	--	.31*
4. A-L	.03	.09	.21*	--

Note. A/L = Academics and Leisure. Correlations among unadjusted and bias-corrected *V*s appear below and above the diagonal, respectively.
$^*p < .01$.

Table 2

Descriptive Statistics for Degree of Sorting by Event Variables and Their Correlation with Extraversion.

	M	*SD*	*N*	Correlation			95% CI	
				IPIP	CQ	COMP	Lower	Upper
Unadjusted *V*								
Valence	.68	.21	176	-.05	-.03	-.04	-.19	.11
Sociality	.63	.18	170	.19*	.15†	.19*	.04	.33
Relationship	.70	.14	176	.27*	.21*	.26*	.12	.40
A/L	.74	.13	176	.13†	.11	.13†	-.02	.27
Bias-Corrected *V*								
Valence	.35	.19	176	-.09	-.06	-.09	-.23	.06
Sociality	.30	.18	170	.15†	.10	.14	-.01	.28
Relationship	.45	.18	176	.22*	.19*	.22*	.08	.36
A/L	.47	.15	176	.09	.09	.09	-.06	.24

Note. V = Cramér's V; A/L = Academics and Leisure; IPIP = International Personality Item Pool Extraversion; CQ = California Q-Set Extraversion; COMP = Composite of IPIP and CQ Extraversion; 95% CI = 95% confidence intervals constructed around correlations with composite extraversion.
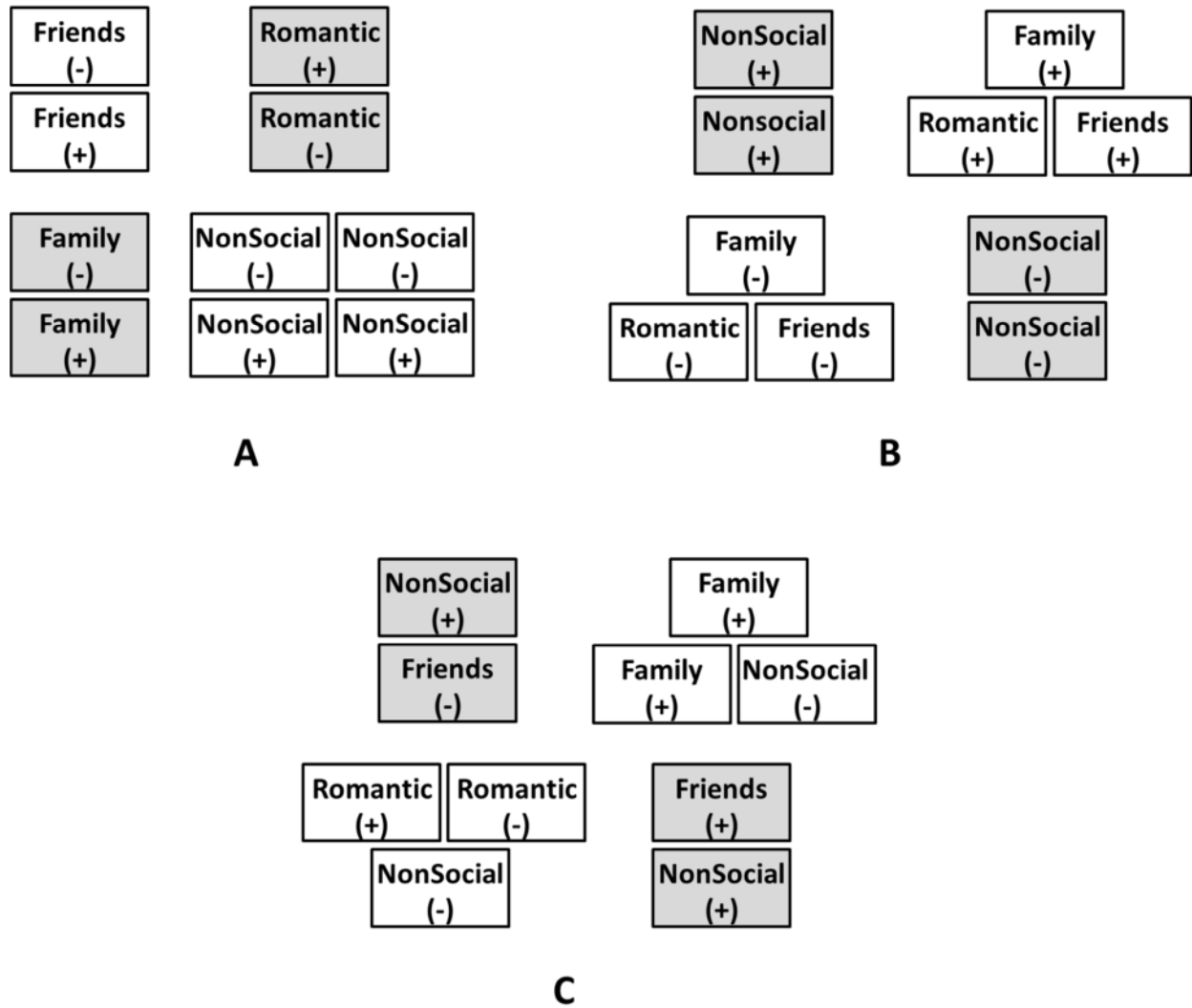$^*p < .05$. $^\dagger p < .10$.

Figure 1. Three examples of events sorted into four groups; some groups are shaded to provide contrast. For each panel, estimates of the degree of sorting by valence, relationship-type, and general sociality as measured by *Cramér's V* were as follows: (A) $V_{Valence} = 0$, $V_{Relationship} = 1.00$, $V_{Sociality} = 1.00$; (B) $V_{Valence} = 1.00$, $V_{Relationship} = 0.58$, $V_{Sociality} = 1.00$; (C) $V_{Valence} = 0.49$, $V_{Relationship} = 0.65$, $V_{Sociality} = 0.17$.