NOVA

University of Newcastle Research Online

nova.newcastle.edu.au

Rubin, Mark; Morrison, Tessa. "Individual differences in individualism and collectivism predict ratings of virtual cities' liveability and environmental quality". Originally published in The Journal of General Psychology Vol. 141, Issue 4, p. 348-372

Available from: <http://dx.doi.org/10.1080/00221309.2014.938721>

Accessed from: <http://hdl.handle.net/1959.13/1054504>

Individual Differences in Individualism and Collectivism Predict
Ratings of Virtual Cities' Liveability and Environmental Quality

Mark Rubin^a

and

Tessa Morrison^a

^aThe University of Newcastle, Australia

This self-archived version is provided for non-commercial and scholarly purposes only.

The APA (6th ed) style reference for this article is as follows:

Rubin, M., & Morrison, T. (2014). Individual differences in individualism and collectivism predict ratings of virtual cities' liveability and environmental quality. *Journal of General Psychology*, 141, 348-372. doi: [10.1080/00221309.2014.938721](https://doi.org/10.1080/00221309.2014.938721)

We are grateful to Gabriel Heaton for his assistance in conducting this research. Correspondence concerning this article should be addressed to Mark Rubin at the School of Psychology, The University of Newcastle, Callaghan, NSW 2308, Australia. Tel: +61 (0)2 4921 6706. Fax: +61 (0)2 4921 6980. E-mail: Mark.Rubin@newcastle.edu.au

Abstract

The present research investigated individual differences in individualism and collectivism as predictors of people's reactions to cities. Psychology undergraduate students ($N = 148$) took virtual guided tours around historical cities. They then evaluated the cities' liveability and environmental quality and completed measures of individualism and collectivism. Mediation analyses showed that people who scored high in self-responsibility (individualism) rated the cities as more liveable because they perceived them to be richer and better resourced. In contrast, people who scored high in collectivism rated the cities as having a better environmental quality because they perceived them to (a) provide a greater potential for community and social life and (b) allow people to express themselves. These results indicate that people's evaluations of virtual cities are based on the degree to which certain aspects of the cities are perceived to be consistent with individualist and collectivist values.

KEYWORDS: city liveability; collectivism; environmental quality; individualism; residential satisfaction.

“You take delight not in a city's seven or seventy wonders, but in the answer it gives to a question of yours.” (Calvino, 1978, p. 44)

Cities meet several different needs of their residents, including social, economic, and environmental needs (e.g., Chen & Rosenthal, 2008; Ge & Hokao, 2006; Matsuoka & Kaplan, 2008). However, urban planners have not tended to consider individual differences in the extent to which these different needs influence people's preferences for different aspects of cities. It is important to consider individual differences in city preference because they may help to predict subsequent changes in the population of a city and its demographic make-up. As Chen and Rosenthal (2008) noted, 45.9% of US residents moved at least once between 1995 and 2000, and the subsequent changes to population size and demographics can have substantial implications for the make-up of a city's workforce and the demands for its different services. However, we do not yet have a clear understanding about why people leave some cities and move to others. As Storper and Manville (2006) explained,

one difficulty is that one of the most interesting generators of change—preference is left outside the scope of urban analysis, making it backward-looking and accounting-oriented rather than forward-looking in a way that would make it useful to urban policy. (p. 1262)

The present research aimed to make the first inroads into this research area by investigating psychological predictors of city evaluation.

To be clear, there are undoubtedly numerous structural factors that influence people's attitudes towards cities. These include the city's architecture, size, infrastructure, transport, crime rates, population density, and quality of housing,

to name only a few. However, as the Italian writer Calvino (1978) alluded to in his book *Invisible Cities*, these factors may be constituents of broader sociocultural “questions” that people ask of their cities. For example, residents' concern about the transport and entertainment venues of a city might form part of a broader psychological concern about the potential for the city to accommodate their need to meet friends and socialize with others. Consistent with this distinction between structural and psychological factors, Ge and Hokao (2006) have distinguished between objectivity and subjectivity when considering residential satisfaction. Objectivity refers to people's living behavior vis-à-vis their consumption of time, space, and money, and subjectivity refers to people's philosophy of life, sense of values, and worldview. In the present research, we focused on the subjective, psychological, and sociocultural aspects of city evaluation. In particular, we investigated the possibility that some people are more concerned with the ability of cities to meet their economic needs and others are more concerned with the ability of cities to meet their social needs.

Below, we discuss past work that has considered city residents' satisfaction and happiness as well as the needs to create wealth and a sense of community. We then consider how individual differences in the sociocultural dimensions of individualism and collectivism might predict the extent to which people evaluate cities in terms of their potential to create wealth and provide community.

Predictors of Satisfaction and Happiness in Cities

Previous research has identified gender differences in satisfaction with suburbs and cities (for a review, see Spain, 1988). This work shows that women tend to be less satisfied with suburban life than men and more likely to prefer to live in cities. This gender difference appears to

be driven by differences in the needs of men and women. Compared to men, women want to feel less isolated and want access to a greater diversity of services and cultural and social opportunities.

More recent research by Goldberg, Leyden and colleagues has considered psychological factors that predict residents' happiness in cities (Goldberg, Leyden, & Scotto, 2012; Leyden, Goldberg, & Michelbach, 2011). Echoing Calvino's (1978) metaphor, Goldberg et al. (2012) proposed that cities can be thought of as providing "solutions" to several human needs and problems. These problems include the *goal of creating wealth* and the *need to belong in communities*. Using a sample of 5,011 respondents across five cities, Goldberg et al. found that two factors predicted residents' happiness: (a) people's perception that their city's services *performed well* in meeting their needs and (b) people's pride in their city as a *place*. Notably, city performance was positively related to the perception that the city offered job opportunities (a means to create wealth), and the relation between place and happiness was mediated by the perceived level of connectedness people felt towards others. Hence, both the goal of creating wealth and the need to belong were key predictors in this research.

Leyden et al. (2011) found similar results in a sample of 10,000 residents living in 10 cities. As they explained, "in addition to the usual correlates, such as income and health, city residents appear to be happier when they feel connected to the people and to the places of their cities" (p. 862).

The present research expanded on this previous work by considering predictors of not only people's evaluation of cities. Happiness is positively related to city evaluation (e.g., Goldberg et al., 2012), and so it is possible that similar processes underline both types of reaction. Based on this assumption, and following Goldberg, Leyden and colleagues, we

predicted that the perceived potential for cities to meet the goal of wealth creation and the need to belong in communities would play key roles in predicting city evaluation, just as they play key roles in predicting residents' happiness.

Sociocultural Predictors of City Evaluation

We also extended previous work in this area by investigating whether there are individual differences in the extent to which people use the dimensions of city wealth and community interaction to evaluate cities. We assumed that some people value cities primarily for their ability to facilitate personal income and wealth while others value cities primarily for their ability to provide community and a sense of connection with others. Consistent with this view, Ge and Hokao's (2006) survey of residents from the Japanese cities Saga and Kitakyushu found pragmatic and community residential preference patterns. The pragmatic pattern was characterized by an emphasis on jobs, money, and daily convenience and a lack of interest in community. In contrast, the community pattern was characterized by an emphasis on community activities and personal relationships. However, Ge and Hokao's research did not explore individual difference predictors of these different patterns of residential satisfaction. It is important to take this step back and consider why some people are more likely to take a pragmatic interest in income and wealth and others are more concerned with community and relationships. This focus on individual differences will provide greater explanatory power and predictive capacity in the area of urban planning.

In the present research, we investigated individual differences in individualism and collectivism as potentially important predictors of city evaluation and the needs and goals that underlie city evaluation. Individualism and collectivism are orientations towards

treating the self and others as individuals or group members respectively (for a review, see Oyserman, Coon, & Kemmelmeier, 2002). Individualists are characterized as being more self-reliant, autonomous, and independent from others, whereas collectivists are considered to be more interdependent and concerned about their social groups, including their family, friends, and community. The individualism-collectivism distinction is a sociocultural variable, with Western (mainly English-speaking) cultures being regarded as more individualistic and nonWestern cultures as more collectivistic. Nonetheless, individual differences within each culture are also readily apparent (e.g., Cross, Bacon, & Morris, 2000; Kashima et al., 1995; Realo, Koido, Ceulemans, & Allik, 2002).

Social and cross-cultural psychologists have found that individualism and collectivism predict the type of dimensions that people use to evaluate and enhance themselves. In particular, Sedikides, Gaertner, and Toguchi (2003) found that individualists are most likely to engage in self-enhancement along individualist dimensions (e.g., free, independent, leader) rather than collectivist dimensions (e.g., agreeable, compromising, cooperative) because individualist dimensions are more personally important to them. In contrast, collectivists are most likely to engage in self-enhancement along collectivist dimensions rather than individualist dimensions because collectivist dimensions are more personally important to them. In the present research, we assumed that similar processes would operate in relation to city evaluation. Specifically, we predicted that people who have a strong individualist orientation would tend to evaluate cities in terms of their resources and wealth because these dimensions are more closely related to their sense of autonomy and self-sufficiency (e.g., Triandis, McCusker, & Hui, 1990, p. 1008; Vohs, Mead, &

Goode, 2006): Rich and wealthy cities allow individualists to fulfill their goal of living in a relatively self-reliant, autonomous, and independent manner. In contrast, people who have a strong collectivist orientation should tend to evaluate cities in terms of their potential to provide community and a sense of connection with their social groups because these dimensions are more important to collectivists (e.g., Sedikides et al., 2003).

Operationally, the above predictions are best conceptualized as mediation effects (Hayes, 2013). Perceived city wealth should mediate the relation between individualism and city evaluation, while potential for community interaction should mediate the relation between collectivism and city evaluation.

To test these predictions, we asked participants to take a virtual walk around unfamiliar, computer-generated, historical cities. Participants then rated the cities on a series of evaluative ratings. Finally, participants responded to a series of scales that measured their levels of individualism and collectivism.

Method

Participants

We recruited participants from undergraduate psychology courses at a large Australian university. Meta-analytic research has established that there is a relatively high degree of consensus between students and nonstudents in evaluations of environmental aesthetics (mean $r = .83$; Stamps, 1999). Hence, we were confident that the results from our student sample would be generalizable to the general population.

Participants were informed that their personal identities would remain anonymous to the researchers. Participants were only identified to the researchers via a code number that was used for the purpose of awarding course credit in exchange for research participation.

We collected data from 196

participants. Of these, 37 withdrew early from the study and did not complete the informed consent question at the end of the survey. A further 11 declined their consent for their data to be included in the data analyses. Hence, a total of 48 participants were excluded from the data analyses. The remaining 148 participants (37 male, 111 female) were aged between 18 and 38 years ($M = 21.59$, $SD = 3.85$). The majority of participants identified as Caucasian ($N = 125$).

Procedure

The study was presented using an online survey. Participants were asked to complete the survey in their own time, on their own, and in a quiet environment that did not contain any distractions. The modal time for survey completion was 14 minutes.

The study was titled “virtual walk around a historical city,” and it was introduced to participants as “investigating people's evaluations of a historical city.” In order to avoid cuing participants to the research predictions and potentially biasing their evaluations of the cities, we did not make any reference to measures of individualism or collectivism in our introduction to the study. Instead, we explained that participants would be asked to indicate how much they agreed or disagreed with a variety of statements about themselves, their personality, and their relationships with others.

As a further safeguard against the potential influence of demand characteristics in our research, we positioned the measures of individualism and collectivism after the measures of city evaluation in our survey. Hence, participants were unaware of the contents of the individualism and collectivism measures until after they had provided their evaluations of the cities. Despite this arrangement, our measures of individualism and collectivism can be treated as “predictor” variables because they are relatively stable dispositions that

are unlikely to change much over time (e.g., Cross et al., 2000; Realo et al., 2002). Hence, we assumed that it was more likely that participants' orientation towards individualism and collectivism would affect their ratings of an unfamiliar city rather than vice versa.

At the start of the survey, participants were covertly and randomly assigned to view one of four 17th and 19th century utopian cities. The four cities were Christianopolis (Andreae, 1619/1999), Campanella's (1602) City of the Sun (More, 1968), New Harmony (Owen, 1817), and Victoria (Buckingham, 1849/2011). These cities were never built, and they have only recently been modelled for the first time (Morrison, 2013). Consequently, the cities were unfamiliar to our participants. This aspect of our methodology allowed us to assess participants' city evaluations without explicitly accessing preconceived attitudes or conceptions about specific cities in the modern world (e.g., “I'm proud of my hometown”; “Paris is romantic”, “This city reminds me of Sydney”, etc.). As Milgram (1974) explained in his classic article on living in cities, “preconceptions affect not only a person's perceptions of a city but what he reports about it.” (p. 1466). Our aim was to limit the influence of preconceptions on our results by using cities with which participants were quite unfamiliar. Furthermore, the use of four different cities ensured that our results could not be attributed to the idiosyncrasies of any one particular city (Wells & Windschitl, 1999).

Participants then viewed a 2.5 minute slide show of a walk through a city from a first-person perspective. Similar virtual walks have been used to measure evaluations of urban and rural scenes in previous research (e.g., Bishop & Rohrmann, 2003; Bishop, Wherrett, & Miller, 2001; Geiser & Walla, 2011). For example, Geiser and Walla (2011) measured participants' emotions as they walked through different areas of a virtual

representation of Paris using the StreetView tool of Google maps. In a comparison of virtual and real environments, Bishop and Rohrmann (2003) concluded that “relative responses seem to be generally reliable and the value of presenting environments via computer graphics, at least in this urban/park environment, is supported” (p. 276). Hence, our approach had the potential to yield results that had some utility with regards to understanding people’s responses to real cities.

During the slide show, participants viewed one of the four cities that were depicted using 25-30 colour slides that were each presented for four seconds. Each slide showed a sequential view of the city from the perspective of a person who enters the city, walks around inside it, and then exits the city. The visual representations of the four cities were designed to be similar in terms of their texture, tone, colours, degree of detail, shadows, and daylight. (They were all set for 11.00am in April, Mediterranean.) An example slide is shown in Figure 1. The four guided tours can be viewed by clicking on the video links below:

1. [Christianopolis:](#)
2. [City of the Sun:](#)
3. [New Harmony:](#)
4. [Victoria:](#)

The slide shows included audio narration that explained what participants were viewing at each stage of their tour. For example, part of the narration for the city Christianopolis explained that:

this square symmetrical city is surrounded by a moat with bastions on each corner of the city. The city is built of brick and has four rows of buildings that circumnavigate the city with a central temple, which is a dominant feature. To enter the city you must cross a bridge and go through a gate.

It was expected that this narration would increase participants’ engagement with the task of viewing the city.

It is important to note that the cities did not include any people (e.g., see Figure 1). Although this aspect of the research presented a rather unnatural scene, it had the advantage of ensuring that participants were not distracted by stimuli other than the city itself. Hence, their evaluation was based on the experience of the city per se rather than its residents. This approach was necessary given that individualists and collectivists would be expected to have different reactions to people (Cross et al., 2000; Kashima et al., 1995; Realo et al., 2002).

Figure 1. Example slide from the virtual walk around the city Victoria.

Measures

Predictor variables:

individualism and collectivism.

Individualism and collectivism are usually conceived as independent and orthogonal constructs rather than as opposite ends of a single continuum (e.g., Oyserman et al., 2002). Hence, it would be inappropriate to assume that, for example, individualists respond in an opposite manner to collectivists. In addition, individualism and collectivism represent relatively broad sociocultural constructs, and several researchers have identified more specific subconstructs (Cross et al., 2000; Kashima et al., 1995; Oyserman et al., 2002; Realo et al., 2002). In keeping with these conceptualizations, we used previously-validated measures of specific aspects of individualism and collectivism in the present research. Participants responded to

the statements in these measures using 7-point Likert-type scales anchored *strongly disagree* and *strongly agree*.

The measures of individualism included *agency*, *assertiveness*, *uniqueness*, *self-responsibility*, and *autonomy*. Agency and assertiveness were measured using two subscales from Y. Kashima et al.'s (1995) Collectivism scale, which is based on the work of Yamaguchi (1994). An example item from the 7-item agency scale is "I do things in my way regardless of what my group members expect me to do." An example item from the 5-item assertiveness scale is "I assert my opposition when I disagree strongly with the members of my group." Uniqueness, self-responsibility, and autonomy were measured using the three subscales from Realo et al.'s (2002) Three-Component Individualism scale. An example item from the 7-item uniqueness scale is "I am not like other people." An example item from the 7-item self-responsibility scale is "at meetings, I always speak out about important issues." And, an example item from the 10-item autonomy scale is "all in all, I don't represent anyone except myself."

The measures of collectivism included *relational interdependence* and *collectivism*. Relational interdependence was measured using Cross et al.'s (2000) 11-item Relational Interdependent Self-Construct scale. An example item is "my close relationships are an important reflection of who I am." Collectivism was measured using the 7-item collectivism subscale of Y. Kashima et al.'s (1995) Collectivism scale. An example item is "I would rather leave my group if I have to sacrifice my self-interest for the group."

Mediator variables: wealth, community, and self-expression. We used a single item to measure the perceived wealth of the city: "how rich and well-resourced do you think the city is" (7-point Likert-type scale anchored *extremely rich and well-resourced* and *extremely*

poor and underresourced). We used a further single item to measure the degree to which participants felt that the cities had the potential to meet the need for community and a sense of connection with others: "how much community interaction and social life do you think would occur in the city" (7-point Likert-type scale anchored *a great deal* and *none at all*).

We also included an item that measured the degree to which participants felt that the city would allow people to express themselves: "how easy do you think it would be for people to express themselves and be who they want to be in this city" (*extremely easy*, *extremely difficult*). We assumed that both individualists and collectivists may consider cities as "tools" that can be used to express their individualism and/or collectivism and meet their associated needs and goals.

Outcome measures: mood and city evaluation. Based on previous research, we used three evaluation measures: *mood*, *environmental quality*, and *liveability*.

Mood. Goldberg, Leyden and colleagues (Goldberg et al., 2012; Leyden et al., 2011) measured the *happiness* of their survey respondents. In the context of a 2.5 minute virtual tour around an unfamiliar city, it was not reasonable to measure long-term happiness. Instead, we measured participants' mood. Specifically, we assessed participants' experience of five positive feelings (happy, enthusiastic, elated, up, good mood) and five negative feelings (sad, anxious, down, depressed, bad mood) as they walked around the city (7-point Likert-type scale anchored *not at all* and *extremely*). These items have been used in previous research to measure mood (Tamir & Robinson, 2004).

Environmental quality. In their extensive review of the urban planning literature, Van Kamp, Leidelmeijer, Marsman, and de Hollander (2003)

distinguished *environmental quality* as a key construct. In the present research, we measured environmental quality using a collection of previously-validated and purpose-built items.

Participants evaluated the pleasantness of the city's environment on a 9-point scale: *extremely pleasant, very pleasant, moderately pleasant, a little pleasant, neutral, a little unpleasant, moderately unpleasant, very unpleasant, extremely unpleasant*. This measure has been used in previous research on design review (Stamps & Nasar, 1997, p. 19). Participants also rated the quality of the city environment using the following five semantic differential scales that have been used in previous research investigating the evaluation of architecture (Akalina, Yildirim, Wilson, & Kilicoglu, 2009): *beautiful–ugly, warm–cold, pleasant–unpleasant, unimposing–imposing, simple–complex, impressive–unimpressive* (7-point Likert-type scales). Finally, participants rated environmental quality on a series of purpose-built items: "I did not like the architecture of the city" (reverse scored); "I enjoyed the open spaces of the city"; "It gave me a good feeling to walk around the city"; "I did not enjoy walking around the city" (reverse scored); "I found the city to be a bit boring" (reverse scored); "I was very impressed by the city" (7-point Likert-type scale anchored *strongly disagree* and *strongly agree*); and "how perfect and ideal did the city seem to you?" (7-point Likert-type scale anchored *totally perfect and ideal, not at all perfect or ideal*).

Liveability. In their review, Van Kamp et al. (2003) distinguished the perceived *liveability* of an environment from the *quality* of the environment. Although liveability is likely to be positively related to environmental quality, the two constructs may also diverge. To illustrate, a person might consider a city environment to be of very high quality and yet rate the city low in terms of its

liveability because they perceive it to be too expensive.

We used three items to assess how liveable participants perceived the city to be. On 7-point Likert-type scales, participants indicated how easy or difficult they found it to imagine living in the city (*extremely easily, extremely difficult*), how happy they thought that people who lived in the city would be (*extremely happy, extremely unhappy*), and they responded to the item: "how 'liveable' would you rate this city?" (*extremely liveable, extremely unliveable*).

Additional measures: city structure. Participants also rated the city on a series of measures that were mainly related to the structural aspects of the city rather than its environmental quality or liveability. These items referred to the city's safety, organization, spaciousness, ease of getting around, similarity of buildings, and symmetry of architecture.

These items did not yield any results that were theoretically informative with respect to the present research questions. Consequently, for the sake of brevity, we do not discuss them any further. Full details of these measures and their results can be obtained from the first author on request.

Demographic items. At the end of the survey, participants responded to a series of demographic items that included their age, gender, and ethnicity. Participants then read a debriefing statement that disclosed the research aims before they were asked to provide their informed consent for their data to be included in the data analyses.

Results

Scale Reliabilities

After reverse-scoring negatively-worded items, most of the measures had acceptable internal reliabilities ($\alpha \geq .69$; see also Table 1). The Cronbach alpha for the mood measure improved from .80 to

.82 when the anxious item was excluded, and the alpha for environmental quality improved from .85 to .90 when the simple-complex and unimposing-imposing semantic differential items were excluded. Consequently, we excluded these items from the computation of the aggregate scores.

The alpha values of the collectivism and agency subscales were not as high as expected (α s = .64 & .58 respectively). However, these values did not improve substantially after the removal of items. Given that these scales represented previously-validated measures that have been shown to possess satisfactory internal reliability in other independent samples (e.g., E. S. Kashima & Hardie, 2000), we decided to compute aggregate scores for these scales on the understanding that they had slightly less statistical power than our other measures and that, consequently, they would be slightly less likely to detect significant effects (i.e., increased chance of false negative results or Type II errors). The means and standard deviations for the measures are presented in Table 1.

Differences Between Cities

In order to investigate potential differences between the four cities, we conducted a series of one-way ANOVAs on our key measures: mood, environmental quality, liveability, needs and goals (community interaction, city wealth and resources, potential for self-expression), and the measures of individualism and collectivism. These tests revealed no significant differences ($ps \geq .075$).

Hence, participants rated the four cities to be equivalent in terms of their mood, environmental quality, liveability, community interaction, and wealth and resources. In addition, none of the cities affected participants' reported individualism and collectivism significantly more than the others.

Zero-Order Correlation Analyses

Table 1 displays the results of zero-order correlation analyses that included the three evaluation measures that represent our outcome variables (mood, environmental quality, and liveability), the three needs and goals measures that represent our explanatory mediator variables (potential for community interaction, perceived city wealth, potential for self-expression) and the seven individualism-collectivism measures that represent our predictor variables (agency, assertiveness, uniqueness, self-responsibility, autonomy, relational interdependence, collectivism).

Our measures showed good evidence of convergent and divergent validity. The three evaluation measures showed significant positive correlations with one another that were not so large as to threaten their divergent validity (r s = .18, .47, & .60). Likewise, the two collectivism measures were significantly and positively related ($r = .24$). The five individualism measures were more variable in their relations: Six of the ten relations were significant and positive (r s ranged from .21 to .61) and four showed nonsignificant, but mainly positive relations (r s = -.13, .10, .11, & .13).

The correlation analyses also replicated some previous research findings. Paralleling Leyden et al.'s (2011) results regarding happiness and wealth, there was a significant positive relation between mood while touring the city and perceived city wealth ($r = .23, p = .004$). However, mood was not significantly related to the potential for community interaction, although this relation was in the predicted direction ($r = .12, p = .12$).

We expected individualism to predict evaluations through the mediating variable of perceived city wealth and collectivism to predict evaluations through the mediating variable of potential for community interaction. We also expected potential for self-expression to mediate

both the individualism and collectivism paths. In order to protect against Type I (false positive) errors, we restricted our mediation tests to those variables that were significantly related to one another in our correlation analyses.

Considering the individualism measures first, self-responsibility was related to perceptions of city wealth ($r = .23, p = .005$) and liveability ($r = .23, p = .004$), and these two variables were significantly related to one another ($r = .45, p < .001$). Hence, in our subsequent mediation analyses, we investigated perceived city wealth as a potential mediator of the relation between self-responsibility and city liveability. Note that self-responsibility did not relate significantly to either the potential for community interaction ($r = .06, p = .483$) or the potential for residents to express themselves ($r = .09, p = .273$). Hence, we did not consider these explanatory variables as potential mediators of the relation between self-responsibility and city liveability. Also note that self-responsibility was not significantly related to ratings of mood ($r = .10, p = .234$) or environmental quality ($r = .11, p = .182$), and that the only other measure of individualism to be significantly related to any of the three evaluation measures was assertiveness, which was positively related to liveability ($r = .22, p = .007$). However, assertiveness was not significantly related to any of our three explanatory variables ($ps \geq .129$). Hence, we also excluded assertiveness from our mediation analyses.

Collectivism was significantly related to environmental quality ($r = .24, p = .004$), the potential for community interaction ($r = .24, p = .004$), and the potential for self-expression ($r = .26, p = .001$), and environmental quality was related to both of these explanatory variables (potential for community interaction: $r = .29, p < .001$; potential for self-expression: $r = .47, p < .001$). Hence, we subsequently tested whether the potential for community interaction and

the potential for self-expression mediated the relation between collectivism and environmental quality. Note that collectivism was not significantly related to either of the other two evaluation measures (mood: $r = .15, p = .074$; liveability: $r = .16, p = .051$). Hence, these nonsignificant paths were not investigated in our mediation analyses. Finally, relational interdependence was not significantly related to any of the evaluation measures ($rs \leq .08, ps \geq .318$), and so this predictor was also excluded from our mediation tests.

Mediation Analyses

We used Hayes' (2013) PROCESS software to test the proposed mediation models. PROCESS uses a path analytical framework and bootstrapping to provide powerful estimates of direct and indirect effects in mediation models.

Our first test investigated perceived city wealth as a potential mediator of the relation between self-responsibility and city liveability. The total effect of self-responsibility on liveability was significant, $b = .32, SE = .11, p = .004$, 95% CI (.10, .53), and the direct effect controlling for perceived city wealth was nonsignificant, $b = .19, SE = .11, p = .069$, 95% CI (-.01, .39). In order to estimate the reliability of the associated indirect effect (i.e., the total effect minus the direct effect), we used 5,000 bootstrapping iterations to obtain bias-corrected and accelerated bootstrap 95% confidence intervals. The indirect effect was significant, $b = .13, SE = .05, 95\% \text{ CI } (.04, .26)$. This pattern of results indicated a significant full mediation effect. As illustrated in the top part of Figure 2, the relation between self-responsibility and city liveability was mediated by perceived city wealth.

Table 1
Cronbach Alpha Values and Zero-Order Correlation Coefficients

Measure	<i>M</i>	<i>SD</i>	α	1	2	3	4	5	6	7	8	9	10	11	12
1. Mood	4.57	.95	.82	—											
2. Environmental quality	4.27	1.02	.90	.47**	—										
3. Liveability	4.25	1.18	.75	.18*	.60**	—									
4. City wealth	5.21	1.17	n/a	.23**	.42**	.45**	—								
5. Community interaction	5.39	1.57	n/a	.12	.29**	.35**	.12	—							
6. Self-expression in city	3.23	1.39	n/a	.19*	.47**	.46**	.21*	.14	—						
7. Agency	4.32	.78	.58	-.12	-.16	.01	-.03	-.11	-.00	—					
8. Assertiveness	4.62	.97	.69	.02	.10	.22**	.13	.11	.04	.43**	—				
9. Uniqueness	4.81	.87	.73	-.12	-.04	.06	.04	-.01	-.04	.21*	.29**	—			
10. Self-responsibility	4.89	.88	.75	.10	.11	.23**	.23**	.06	.09	.33**	.61**	.38**	—		
11. Autonomy	4.85	.77	.76	-.03	-.02	.01	.17*	-.05	.00	.11	-.13	.13	.10	—	
12. Relational interdependence	5.22	.85	.86	.01	.08	.01	.18*	.03	.07	-.05	.05	.22**	.20*	.01	—
13. Collectivism	4.81	.75	.64	.15	.24**	.16	.09	.24**	.26*	.37**	.03	.08	.09	-.19*	.24**

Note. All *ns* = 148. n/a = The measure consists of a single item, and the Cronbach alpha statistic is not applicable.

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

Figure 2. Mediation models. Beta values are unstandardized. Values in parentheses represent total effects. $^* p < .05$. $^{**} p < .01$.

We also conducted two mediation tests to investigate potential for community interaction and potential for residents to express themselves as mediators of the relation between collectivism and environmental quality. Note that the two proposed mediators were not significantly related to one another ($r = .14, p = .089$), and so the models reported below do not include one mediator as a covariate when testing for the effects of the other. Nonetheless, it is reassuring to note that the pattern of results remained the same when this covariation approach is followed. Hence, these mediators are not mutually redundant.

The total effect of collectivism on environmental quality was significant, $b = .32, SE = .11, p = .004, 95\% CI (.11, .54)$. The direct effect controlling for potential for community interaction was also significant but smaller in size, $b = .24, SE = .11, p = .027, 95\% CI (.03, .46)$, and the associated indirect effect was significant, $b = .08, SE = .04, 95\% CI (.02, .19)$. In addition, the direct effect controlling for potential for self-expression was nonsignificant, $b = .17, SE = .10, p = .101, 95\% CI (-.03, .37)$, and the associated indirect effect was significant, $b = .15, SE = .05, 95\% CI (.06, .27)$. These patterns of results indicated significant *partial* and *full* mediation effects respectively, and they are illustrated in the middle and bottom parts of Figure 2.

Discussion

If, as Calvino (1978) supposed, cities are evaluated positively to the extent that they provide “answers” to people’s psychological “questions”, then there are liable to be important individual differences in the process of city evaluation because different types of people are often driven by different questions. The present research explored this possibility by investigating individual differences in individualism and collectivism as predictors of evaluations of virtual cities. Consistent with predictions,

people who had a strong sense of self-responsibility (an aspect of individualism) evaluated a virtual city’s liveability in terms of its wealth and resources. In contrast, people who had a strong collectivist orientation evaluated a virtual city’s environmental quality in terms of its potential for community interaction and social life. Below, we discuss a number of ways in which these research findings advance our understanding of the relation between people and cities.

Perceived Community and City Wealth Predict the Evaluation of Virtual Cities

Recent work by Goldberg, Leyden and colleagues has found that the perceived community and wealth of cities predict people’s happiness (Goldberg et al., 2012; Leyden et al., 2011). The present research demonstrates that a similar wealth-mood relation occurs among observers of an unfamiliar and virtual city. We also found that potential for community and perceived city wealth predicted city liveability and environmental quality. Again, these results resonate with the work of Goldberg, Leyden and colleagues.

Of course, it would be inappropriate to draw too close a parallel between psychology students’ ratings of virtual, uninhabited, and historical cities and residents’ ratings of modern cities in the real-world. Nonetheless, the similarities between our results and those of previous research suggest that common processes may underlie people’s evaluations of cities, be they modern or historic, real or virtual, and inhabited or uninhabited. In this respect, we believe that the present research may make a useful contribution to the research in this area.

Individualism and Collectivism Predict the Evaluation of Virtual Cities

The present research is the first to demonstrate empirical relations between certain aspects of individualism and

collectivism and the evaluations of virtual cities. In particular, our evidence indicates that individual differences in self-responsibility, assertiveness, and collectivism play a significant role in predicting the perceived environmental quality and liveability of virtual cities.

Interestingly, self-responsibility and assertiveness predicted city liveability but not environmental quality, and collectivism predicted environmental quality but not liveability. Hence, individualists appear to evaluate virtual cities rather analytically in terms of their performance for personal living, whereas collectivists appear to evaluate virtual cities more holistically in terms of the environmental quality of the place overall. In the urban planning literature, this pattern of results coincides with Goldberg et al.'s (2012) distinction between performance and place and Ge and Hoako's (2006) distinction between pragmatic and community residential preference patterns. In the cross-cultural psychology literature, these results fit with research showing that individualists tend to have an analytical mode of processing information and collectivists have a more holistic mode of processing (e.g., Nisbett, Peng, Choi, & Norenzayan, 2001).

Notably, of our five measures of individualism, only self-responsibility and assertiveness showed significant relations with city liveability. The mean effect size of these relations was .23, and a post hoc power analysis showed that the power for a two-tailed correlation test with an alpha of .05 and an *N* of 148 was an acceptable .81. Hence, the null effects found for the other three measures of individualism were more likely to be genuine null effects rather than Type I errors due to low statistical power. These null findings illustrate the importance of distinguishing between different types of individualism. It is possible that individualists appraise city liveability in terms of wealth and resources because these qualities help to meet their goals of living as enterprising

and capable individuals who take responsibility for their own decisions, rather than as unique, autonomous, or agentic individuals.

It is also notable that no aspect of individualism or collectivism predicted people's mood as they toured the virtual cities in this research. The tentative conclusion to be drawn here is that while individualism and collectivism predict the evaluation of virtual cities, they do not predict the more distal sense of happiness that is associated with positively-evaluated cities. However, given the many differences between mood while viewing a virtual city and residents' happiness while living in a real city, future research should use alternative methods and measures before drawing firm conclusions on this matter.

The present research also underlines the importance of distinguishing between collectivism and relational interdependence (Brewer & Gardner, 1996). As Brewer and Chen (2007) suggested, "relational and group collectivism may be more incompatible overall than are aspects of individualism with aspects of either form of collectivism" (p. 142). The present results support this view. Only collectivism showed the predicted relations with evaluation of virtual cities; relational interdependence showed no significant relations with city evaluation. It is possible that collectivists value cities as places in which their groups, rather than their individual selves, can thrive by developing a strong community and social life. In this sense, collectivists may evaluate cities on the basis of whether they are good for their groups, rather than for their individual or relational selves. Again, future research should employ different measures of both individualism and collectivism in order to corroborate these results.

Finally, it is important to appreciate that both collectivism and individualism (assertiveness and self-

responsibility) showed *positive* relations with the evaluation of virtual cities, and that they rarely showed significant negative relations with one another (see Table 1). These results indicate that individualism and collectivism are not necessarily opposites but rather independent constructs. They also indicate that participants who had *weaker* orientations on both of these dimensions tended to rate the cities *less* positively. It is possible that people who are neither strong individualists nor strong collectivists may rate cities less positively because they perceive them to be less useful “tools” that can be used to accomplish individualistic and collectivistic needs and goals. Or, to return to Calvino’s metaphor, people who lack strong individualist or collectivist orientations do not have psychologically important “questions” to be “answered” by their cities.

Perceived Community and City Wealth Mediate the Relations Between Individualism, Collectivism, and the Evaluation of Virtual Cities

The present research is not only the first to make empirical connections between individualism-collectivism and the evaluation of virtual cities, but also the first to explain *why* this connection exists vis-à-vis the needs and goals of community interaction and wealth creation. Specifically, the relation between self-responsibility and city liveability was mediated by perceived city wealth, and the relation between collectivism and environmental quality was mediated by the potential for community interaction. Hence, people with a strong sense of self-responsibility tended to evaluate the virtual cities in terms of their potential to meet the individualist goal of acquiring resources, income, and wealth, whereas people with a strong sense of collectivism tended to evaluate the cities in terms of their potential to provide community and a

sense of connection with others.

Given that there are cross-cultural differences in individualism and collectivism (Oyserman et al., 2002), a next step in this line of research will be to investigate cross-cultural differences in city evaluation. This research direction coincides with Van Kamp et al.’s (2003) call for urban planners to engage in cross-cultural comparisons in order to give “substance to the dimensions of needs and desires [and reveal] which aspects of the environment are important for everyone (basic needs, basic quality) and which are strongly dependent of time, place and culture” (p. 15). Based on the current findings, we would predict that people from Western cultures will evaluate cities rather instrumentally and analytically in terms of their liveability and performance in providing wealth, and that people from nonWestern cultures will evaluate cities more holistically in terms of the environmental quality of the overall place and its potential for enabling their social groups to engage in community interaction and social life.

Interestingly, we also found that collectivists valued virtual cities in terms of their potential to enable residents to express themselves and be who they want to be, whereas individualists did not. These results may reflect the non-normative nature of collectivism in a primarily individualistic (Australian) culture. In this context, individualists may have taken it for granted that they would be able to express their individualism in cities. In contrast, collectivists may not have made the same assumption about the expression of their collectivism and, consequently, freedom of collective self-expression played a larger role in their evaluation of virtual cities. Again, a powerful method of investigating this possibility will be to compare participants from Western and nonWestern cultures.

Strengths, Weaknesses, and Directions for Future Research

In the present research, we asked psychology students to consider novel, historical, uninhabited, utopian cities in a virtual environment. This rather artificial research paradigm helped to eliminate several extraneous and potentially confounding variables that would have reduced the clarity of our research conclusions. First, the use of nonresidential participants prevented city pride from influencing evaluations (e.g., Permentier, van Ham, & Bolt, 2007). This point is important because people who are high in collectivism are more likely to derive a sense of pride from their in-groups, including their cities (Gabriel & Gardner, 1999). Second, the use of novel historical cities reduced the influence of participants' preconceived evaluations of specific cities with which they were familiar on their evaluations of the city that they toured during the study (Milgram, 1974). Third, the use of an unpopulated, deserted city allowed participants to focus on the city itself and imagine what it might be like to live there rather than to have their evaluations affected by the actual degree of social life that occurred within the city and/or the specific types of people and social groups that were represented in the city. Again, this controlled approach was particularly important because individual differences in individualism and collectivism have been shown to influence attitudes towards people (Cross et al., 2000; Kashima et al., 1995; Realo et al., 2002), and we wanted to control for this potential confound in our research in order to assess the relation between individualism, collectivism, and city evaluation independent of people evaluation. Hence, our approach obtained relatively unbiased evaluations of virtual cities, independent of other potentially confounding variables.

A key limitation of our research methodology is that it lacked ecological validity because it involved nonresidents

evaluating novel, historical, virtual, and unpopulated cities. In particular, people are essential parts of real cities, and the dynamic atmosphere of a living city cannot be properly appreciated unless it is considered together with the people who inhabit it. In this sense, it might be more appropriate to consider the rather artificial cities that our participants viewed as city prototypes or models, rather than genuine cities. In addition, it is important to consider the evaluations of residents of cities as well as unaffiliated observers. These issues raise questions about the generalizability of our results to residents' evaluations of more familiar, modern, real-world, populated cities, and these questions must be addressed before clear conclusions can be drawn about the applicability of our findings to real cities. Nonetheless, there are two reasons why the lack of ecological validity in our research does not necessarily reduce the usefulness of our research findings.

First, ecological validity is not always necessary in order for psychological research studies to make useful contributions to research areas (Brewer, 2000, pp. 12-13; Mook, 1983; Rubin, Paolini, & Crisp, 2010). Indeed, low ecological validity may often be a necessary consequence of the sort of laboratory-based experimental control that is required in order arrive at clear theoretical conclusions; conclusions that would be less clear if they were based on the results of studies in which confounding variables allowed for a greater number of alternative explanations. To illustrate, Tajfel, Billig, Bundy, and Flament (1971) made significant advances in the area of intergroup relations based on empirical work that involved participants being assigned to *minimal groups* that were novel, ad hoc, ahistorical, unfamiliar, short-lived, non-interacting groups whose group members were only identified by code numbers and group labels. Like our virtual and unpopulated cities, these laboratory-based minimal groups did not

provide a good representation of their real-world counterparts. Nonetheless, they allowed the researchers to discount various potentially competing explanations for their results (e.g., interpersonal biases) and arrive at clearer theoretical conclusions about the nature of intergroup bias. (See Asch, 1956, and Milgram, 1957, for other classic examples of psychological research that lacked ecological validity but nonetheless provided important insights into psychological processes.)

In the present research, our use of virtual and unpopulated cities allowed us to rule out city pride and attraction to specific people and groups as potential reasons for the positive relation between collectivism and city evaluation. Hence, we can be relatively confident that collectivism positively predicted environmental quality due to the perceived potential for community and social life and not due to an attraction towards the city as an in-group or the specific people or groups that were represented in the city. Again, it was particularly important to rule out these alternative explanations in the present research given that, by definition, collectivists have a strong degree of in-group pride and relatively positive attitudes towards people (Cross et al., 2000; Gabriel & Gardner, 1999; Kashima et al., 1995; Realo et al., 2002).

Second, the present results may generalize to real-world cities even in the absence of ecological validity if it is assumed that similar processes operate in the evaluation of both virtual and real cities. In support of this assumption, previous research has confirmed a degree of equivalence between evaluations of virtual and real environments (Bishop & Rohrmann, 2003). In addition, our findings based on psychology students' evaluations of perceived community, perceived wealth, mood, city liveability and environmental quality were very similar to those reported by Goldberg, Leyden and colleagues based on residents' evaluations of real cities (Goldberg et al.,

2012; Leyden et al., 2011). Hence, although the virtual cities in the present research may not provide ecologically-valid representations of real cities in the modern world, the processes that are involved in evaluating virtual and real cities may nonetheless be similar to one another.

In summary, the lack of ecological validity in our research methodology (a) helped to rule out alternative explanations for our results and (b) does not necessarily preclude the applicability of our research conclusions to real-world cities. Nonetheless, a vital next step for future research in this area is to provide a more ecologically-valid test of our predictions by investigating whether our results generalize to residents' evaluations of familiar, real, modern, and populated cities.

Alternative Explanation: Personality Projection

Although our research methodology helps to rule out some alternative explanations based on in-group pride, city familiarity, and people attraction, it opens up the potential for another alternative explanation based on projection. Specifically, it is possible that participants projected their own individualist and collectivist values and preferences into their responses about the city. This personality projection explanation is particularly plausible given the rather abstract and minimalist city stimuli that participants were asked to evaluate: a 2.5 minute slide show of a novel, uninhabited, virtual city. According to this projection explanation, our results are artefacts of our minimalist methodology rather than genuine relations between individualism, collectivism, and city evaluation.

However, a key problem with the projection explanation is that it does not provide a parsimonious explanation of the specific pattern of evidence that we obtained. According to the projection

explanation, most of our measures of individualism and collectivism should have shown significant positive relations with environmental quality and liveability because there is no theoretical reason to expect the degree of projection to vary substantially with respect to different types of individualism or collectivism. For example, from a projection perspective, relational interdependence should be projected onto city evaluations just as much as collectivism and, consequently, we should have found a positive relation between relational interdependence and our measures of city evaluation. However, our results did not reveal this relation nor a more general indiscriminate pattern of positive relations that would be predicted by a projection explanation. Instead, we obtained a quite specific pattern of results in which individual differences in self-responsibility, assertiveness, and collectivism predicted city evaluation but individual differences in agency, uniqueness, autonomy, and relational interdependence did not. Moreover, we found that self-responsibility and assertiveness predicted city liveability but not environmental quality, and collectivism predicted environmental quality but not liveability. Again, post hoc power analyses suggest that our null findings were not due to a lack of power. Although our specific pattern of results can be explained with recourse to the urban planning and cross-cultural psychology literature (Ge & Hoako, 2006; Goldberg et al., 2012; Nisbett, Peng, Choi, & Norenzayan, 2001), they are less explicable in terms of a relatively broad-brush projection process. Consequently, although it is not possible to completely rule out a projection explanation, we do not believe that it provides the best account of our specific research findings.

Conclusions and Implications for Psychology and Urban Planning

The present research provides the first evidence that individual differences in

certain aspects of individualism and collectivism predict evaluations of virtual cities, and that cities' perceived potential to provide wealth and community interaction mediate these relations. These results suggest that people's evaluations of virtual cities are, to some extent, based on the degree to which the cities are perceived to be consistent with individualist and collectivist values.

These findings have important implications for both psychology and urban planning. Social and cross-cultural psychologists have shown that individualism and collectivism predict attitudes towards people (Cross et al., 2000; Kashima et al., 1995; Realo et al., 2002). The present research shows that these broad sociocultural variables also predict attitudes towards virtual cities. Moreover, the present research complements evidence that individualists and collectivists diverge with respect to the type of dimensions on which they evaluate themselves (Sedikides et al., 2003) by demonstrating that individualists and collectivists also diverge with respect to the type of dimensions on which they evaluate virtual cities. In general then, the present research extends work on individualism and collectivism by demonstrating that individual differences in the endorsement of these sociocultural values have important implications not only for attitudes towards people but also for attitudes towards the cities in which people live.

Similarly, urban planners have long recognised that different demographic groups (e.g., based on age, gender, socioeconomic status, etc.) value different aspects of urban environments (e.g., Chen & Rosenthal, 2008; Spain, 1988; for a review, see Matsuoka & Kaplan, 2008, p. 14). The present research adds to this line of work by demonstrating that different psychological groups (viz., individualists and collectivists) may also value different aspects of virtual urban environments. These findings are important because they

may help us to understand why some people choose to move into certain cities and why others choose to leave. In other words, the present work may contribute towards the more accurate prediction of population changes in cities. In addition, the present results highlight the potentially important role of meeting the specific psychological needs of people with different sociocultural values in order to improve their residential satisfaction. Hence, the present work points the way towards a new approach towards improving people's satisfaction with cities.

More generally, the present research illustrates the usefulness of adopting an interdisciplinary approach to city evaluation that uses individual differences in psychological and sociocultural constructs to understand preferences for urban environments. As discussed previously, this type of approach has been lacking in the urban studies literature despite an obvious need for a better understanding of urban preference choice (Storper & Manville, 2006). Future research should consider individual differences in other relevant personality variables as potential predictors of city evaluation.

In conclusion, and to paraphrase Calvino (1978), city evaluation may be based on the answers that cities provide to our questions. However, different types of people can have different types of questions. Individualists appear to ask: "can this city enhance my personal wealth?", whereas collectivists appear to ask: "can this city enhance my group's community?"

References

- Akalina, A., Yildirim, K., Wilson, C., & Kilicoglu, O. (2009). Architecture and engineering students' evaluations of house façades: Preference, complexity and impressiveness. *Journal of Environmental Psychology*, 29, 124–132. doi: 10.1016/j.jenvp.2008.05.005
- Andreae, J. V. (1999). *Christianopolis* (E. H. Thompson, Trans.). Dordrecht, The Netherlands: Kluwer Academic Publishers. (Originally published 1619)
- Asch, S. E. (1956). Studies of independence and conformity: A minority of one against a unanimous majority. *Psychological Monographs: General and applied*, 70, 1-70.
- Bishop, I. D., & Rohrmann, B. (2003). Subjective responses to simulated and real environments: A comparison. *Landscape and Urban Planning*, 65, 261-277. doi: 10.1016/S0169-2046(03)00070-7
- Bishop, I. D., Wherrett, J. R., & Miller, D. R. (2001). Assessment of path choices on a country walk using a virtual environment. *Landscape and Urban Planning*, 52, 225-237. doi: 10.1016/S0169-2046(00)00118-3
- Brewer, M. (2000). Research design and issues of validity. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 3-16). New York: Cambridge University Press.
- Brewer, M. B., & Chen, Y. R. (2007). Where (who) are collectives in collectivism? Toward conceptual clarification of individualism and collectivism. *Psychological Review*, 114, 133-151. doi: 10.1037/0033-295X.114.1.133
- Buckingham, J. S. (2011). *National evils and practical remedies: With a plan for a model town*. Cambridge, UK: Cambridge University Press. (Original work published 1849)
- Calvino, I. (1978). *Invisible cities*. New York: Houghton Mifflin Harcourt.
- Campanella, T. (1968). Campanella's City of the Sun. In T. More (Ed.), *Ideal commonwealths: Comprising*

- More's Utopia, Bacon's New Atlantis, Campanella's City of the Sun, and Harrington's Oceana.* (pp. 141-79). Port Washington, NY: Kennikat Press.
- Chen, Y., & Rosenthal, S. S. (2008). Local amenities and life-cycle migration: Do people move for jobs or fun? *Journal of Urban Economics*, 64, 519-537. doi: 10.1016/j.jue.2008.05.005
- Cross, S. E., Bacon, P. L., & Morris, M. L. (2000). The relational-interdependent self-construal and relationships. *Journal of Personality and Social Psychology*, 78, 791-808. doi: 10.1037/0022-3514.78.4.791
- Gabriel, S., & Gardner, W. (1999). Are there "his" and "hers" types of interdependence? The implications of gender differences in collective versus relational interdependence for affect, behavior, and cognition. *Journal of Personality & Social Psychology*, 77, 642-655. doi: 10.1037/0022-3514.77.3.642
- Ge, J., & Hokao, K. (2006). Research on residential lifestyles in Japanese cities from the viewpoints of residential preference, residential choice and residential satisfaction. *Landscape and Urban Planning*, 78, 165-178. doi: 10.1016/j.landurbplan.2005.07.004
- Geiser, M., & Walla, P. (2011). Objective measures of emotion during virtual walks through urban environments. *Applied Sciences*, 1, 1-11. doi: 10.3390/as1010001
- Goldberg, A., Leyden, K. M., & Scotto, T. J. (2012). Untangling what makes cities liveable: happiness in five cities. *Proceedings of the ICE-Urban Design and Planning*, 165, 127-136. doi:10.1680/udap.11.00031
- Hayes, A. F. (2013). *An introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.
- Kashima, E. S., & Hardie, E. A. (2000). The development and validation of the Relational, Individual, and Collective self-aspects (RIC) Scale. *Asian Journal of Social Psychology*, 3, 19-48. doi: 10.1111/1467-839X.00053
- Kashima, Y., Yamaguchi, S., Kim, U., Choi, S.-C., Gelfand, M. J., & Yuki, M. (1995). Culture, gender, and self: A perspective from individualism-collectivism research. *Journal of Personality and Social Psychology*, 69, 925-937. doi: 10.1037/0022-3514.69.5.925
- Leyden, K. M., Goldberg, A., & Michelbach, P. (2011). Understanding the pursuit of happiness in ten major cities. *Urban Affairs Review*, 47, 861-888. doi: 10.1177/1078087411403120
- Matsuoka, R. H., & Kaplan, R. (2008). People needs in the urban landscape: Analysis of *Landscape and Urban Planning* contributions. *Landscape and Urban Planning*, 84, 7-19. doi: 10.1016/j.landurbplan.2007.09.009
- Milgram, S. (1963). Behavioral study of obedience. *Journal of Abnormal and Social Psychology*, 67, 371-378.
- Milgram, S. (1974). The experience of living in cities. *Crowding and Behavior*, 167, 1461-1468.
- Mook, D. G. (1983). In defense of external invalidity. *American Psychologist*, 38, 379-387. doi: 10.1037/0003-066X.38.4.379
- More, T., Campanella, T., Bacon, F., Harrington, J., & Morley, H. (1968). *Ideal commonwealths; comprising: More's Utopia, Bacon's New Atlantis, Campanella's City of the Sun, and Harrington's Oceana*. Port

- Washington. NY: Kennikat Press.
Washington: Kennikat Press.
- Morrison, T. (2013). Utopian cities from 15th to 19th century literature: A philosophical investigation through 3-D visualization. *Electronic Visualisation and the Arts, 2013* (pp. 181-188). London, UK. Retrieved from <http://ewic.bcs.org/content/ConWebDoc/51022>
- Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review, 108*, 291-310. doi: 10.1037//0033-295X.108.2.291
- Owen, R. (1817). *Report to the Committee of the Association for the Relief of the Manufacturing and Labouring Poor*. Retrieved from <https://webpace.utexas.edu/hcleaver/www/368/368owenrptcom.html>
- Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*, 3-72. doi: 10.1037/0033-2909.128.1.3
- Permentier, M., van Ham, M., & Bolt, G. (2007). Behavioural responses to neighbourhood reputations. *Journal of Housing and the Built Environment, 22*, 199-213. doi: 10.1007/s10901-007-9075-8
- Realo, A., Koido, K., Ceulemans, E., & Allik, J. (2002). Three components of individualism. *European Journal of Personality, 16*, 163-184. doi: 10.1002/per.437
- Rubin, M., Paolini, S., & Crisp, R. J. (2010). A processing fluency explanation of bias against migrants. *Journal of Experimental Social Psychology, 46*, 21-28. doi: 10.1016/j.jesp.2009.09.006
- Sedikides, C., Gaertner, L., & Toguchi, Y. (2003). Pancultural self-enhancement. *Journal of Personality and Social Psychology, 84*, 60. doi: 10.1037/0022-3514.84.1.60
- Singelis, T. M. (1994). The measurement of independent and interdependent self-construals. *Personality and Social Psychology Bulletin, 20*, 580-591. doi: 10.1177/0146167294205014
- Spain, D. (1988). An examination of residential preferences in the suburban era. *Sociological Focus, 21*, 1-8.
- Stamps, A.E. (1999). Demographic effects in environmental aesthetics: a meta-analysis. *Journal of Planning Literature, 14*, 155-175. doi: 10.1177/08854129922092630
- Stamps, A. E., & Nasar, J. L. (1997). Design review and public preferences: Effects of geographical location, public consensus, sensation seeking, and architectural styles. *Journal of Environmental Psychology, 17*, 11-32.
- Storper, M., & Manville, M. (2006). Behaviour, preferences and cities: Urban theory and urban resurgence. *Urban Studies, 43*, 1247-1274. doi: 10.1080/00420980600775642
- Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behaviour. *European Journal of Social Psychology, 1*, 149-178. doi: 10.1002/ejsp.2420010202
- Tamir, M., & Robinson, M. D. (2004). Knowing good from bad: The paradox of neuroticism, negative affect, and evaluative processing. *Journal of Personality and Social Psychology, 87*, 913-925. doi: 10.1037/0022-3514.87.6.913
- Triandis, H. C., McCusker, C., & Hui, C. H. (1990). Multimethod probes of

- individualism and collectivism.
Journal of Personality and Social Psychology, 59, 1006-1020. doi:
10.1037/0022-3514.59.5.1006
- Van Kamp, I., Leidelmeijer, K., Marsman, G., & de Hollander, A. (2003). Urban environmental quality and human well-being: Towards a conceptual framework and demarcation of concepts; a literature study. *Landscape and Urban Planning*, 65, 5-18. doi: 10.1016/S0169-2046(02)00232-3
- Vohs, K. D., Mead, N. L., & Goode, M. R. (2006). The psychological consequences of money. *Science*, 314, 1154-1156. doi: 10.1126/science.1132491
- Wells, G. L., & Windschitl, P. D. (1999). Stimulus sampling and social psychological experimentation. *Personality and Social Psychology Bulletin*, 25, 1115-1125. doi: 10.1177/01461672992512005
- Yamaguchi, S. (1994). Collectivism among the Japanese: A perspective from the self. In U. Kim, H. C. Triandis, C. Kagitcibasi, S. C. Choi, & G. Yoon (Eds.), *Individualism and collectivism* (pp. 175-188). Newbury Park, CA: Sage.