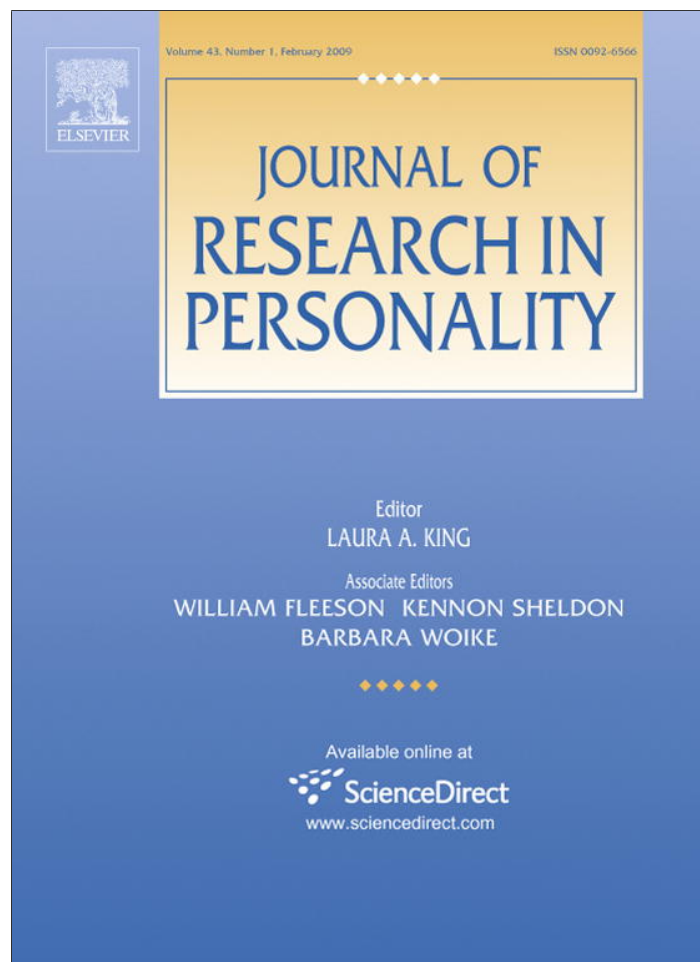


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Are Mexicans more or less sociable than Americans? Insights from a naturalistic observation study

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ABSTRACT

Stereotypes about Mexicans are that they are outgoing, talkative, sociable, and extraverted. However, in self-reports, Mexicans rate themselves as less extraverted than Americans. To resolve this paradox, we measured self-reported sociability using a personality questionnaire, and behavioral sociability using the Electronically Activated Recorder (EAR) in Mexican and American students. The results showed that Mexicans saw themselves as less sociable than Americans, but they behaved more sociably in their everyday lives. The results also showed that expressions of sociability differed across cultures in accordance with manifestations of interdependent–independent selves. Whereas Mexicans socialized more often in public environments and by interacting with a person who is immediately present, Americans socialized more in private environments and by interacting with remote persons.

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1. Introduction

According to people's lay beliefs, sociability is a core characteristic of Mexicans. For example, Mexicans prefer being with others over being alone; they enjoy social activities, such as going to parties and gatherings; they enjoy interacting with family and friends; they are talkative and gregarious. Indeed, Mexican ethnopsychologists report that one of Mexicans' core personality traits is Expressive Sociability, which includes being "extraverted, communicative, fun, outgoing, free, expressive, friendly, and sociable" (Díaz-Loving & Draguns, 1999, p. 117).

A straightforward cross-cultural prediction can then be made such that Mexicans should rate themselves higher on Extraversion scales than a group who might not be regarded as similarly sociable such as native English speaking North Americans. Counter to this prediction, however, Mexicans have been found to score significantly lower on Extraversion than do Americans (McCrae, 2001; McCrae, Terraciano, & the 79 Members of the Personality Profiles of Cultures Project, 2005; Ramírez-Esparza, Gosling, Benet-Martínez, Potter, & Pennebaker, 2006).

This counterintuitive finding is empirically robust across a wide range of studies, samples, and inventories. For example, Ramírez-Esparza et al. (2006) found that Mexicans who responded to the Big Five Inventory (BFI) in Spanish (Benet-Martínez & John, 1998)

rated themselves as less extraverted than Americans who responded to the BFI in English (John & Srivastava, 1999). Similar differences in self-rated Extraversion were found by McCrae (2001) using the Revised NEO Personality Inventory in English (NEO-PI-R; Costa & McCrae, 1992) and Spanish (Cassaretto, 1999, in McCrae, 2001). Specifically, Hispanic-Americans rated themselves as less extraverted than Americans. McCrae et al. (2005) further found similar differences between Mexicans and Americans with NEO-PI-R observer-ratings in English and Spanish.

Beyond Extraversion, similar counterintuitive findings have also been reported for Agreeableness and Conscientiousness. For example, Ramírez-Esparza, Gosling, and Pennebaker (2008) found that although Mexicans are characterized as a highly agreeable culture (Triandis, Marín, Lisansky, & Betancourt, 1984) they present themselves as less agreeable than do Americans on self-reports. Likewise, Heine, Buchtel, and Norenzayan (2008) found that across 10 countries, self-reports of Conscientiousness do not correlate with behavioral indicators of conscientiousness such as postal workers' speed, clock accuracy, and walking speed. Finally, paradoxical findings also extend to cultural self-concepts. Although there is a prevalent assumption that East-Asians are more interdependent than Americans, Oyserman, Coon, and Kimmelmeier (2002) did not find systematic differences in their levels of inter- and independent self-construals in a meta-analysis.

What can account for these paradoxical findings? One possible answer is that people's lay beliefs might not reflect real cross-cultural differences in personality (Terraciano, Abdel-Khalek, et al., 2005). That is, perhaps Mexicans are in fact less sociable than

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Americans, and folk beliefs are wrong. Another possibility is that individuals' perceptions of how they typically behave (when they complete a self-report questionnaire) do not correspond very well to how they actually behave (Heine et al., 2008; Vazire & Mehl, 2008). *Self-reported* sociability across cultures has been widely researched as discussed above. However, *behavioral* sociability across cultures has been considerably less explored (cf. Baumeister, Vohs, & Funder, 2007). In the present study, we sought to learn how sociable Mexicans and Americans consider themselves to be when rating themselves using a traditional personality self-report, and how sociable Mexicans and Americans actually behave in their daily lives. We assessed participants' real-world social behaviors using a naturalistic observation sampling technique that has the potential to help overcome several methodological obstacles in cross-cultural research.

1.1. Assessing behavioral sociability across cultures

One way to study cross-cultural differences in behavioral sociability is to use global self-reports. Although this technique is unrivaled in efficiency and economy, it is also subject to some important limitations. First, questionnaire measures in cross-cultural research always suffer from potential translation problems (see Brislin, 1980, 1986). For decades, researchers have been developing methods for translation quality-checks (e.g., item-bias analyses; see van de Vijver & Leung, 1997a, 1997b). Although these methods are effective at improving translation accuracy, there is accumulating evidence to suggest that the language in which the questionnaire is administered can bring out different nuances of self-views, thoughts, and feelings in bilingual respondents (Bond & Yang, 1982; Ramírez-Esparza et al., 2006, 2008; Yang & Bond, 1980). Furthermore, there is ample evidence showing that culture interacts with response biases such as self-enhancement (Heine & Lehman, 1997; Heine & Renshaw, 2002), reference group effects (Heine, Lehman, Peng, & Greenholtz, 2002), and the tendency to use the extremes on a likert-type scale (Hui & Triandis, 1989; Marín, Gamba, & Marín, 1992). Thus, even when a questionnaire has passed all translation credentials, the language of its administration and cultural background of individuals can systematically affect self-reports.

A second limitation of the use of self-reports in cross-cultural research is that although sociability can be considered a universal trait (e.g., McCrae & Costa, 1997), translated questionnaires sometimes fail to tap specific social behaviors that are unique to a culture (cf. Benet-Martínez & Waller, 1997). That is, if conceptions of social behavior are taken from the culture in which the questionnaire was developed (in this case the American culture) and imposed onto another culture (in this case the Mexican culture), the questionnaire then may fail to capture social behaviors that are idiosyncratic to the "imposed" culture (Church & Katigbak, 1988).

A methodology with the potential of overcoming translation problems associated with self-reports, and capable of capturing indigenous aspects of within-culture sociability is the systematic observation of social behaviors in naturalistic settings (Longabaugh, 1980). The latest methodology for the sampling of behavioral observations in naturalistic settings is the *Electronically Activated Recorder* (EAR; Mehl, Pennebaker, Crow, Dabbs, & Price, 2001). The EAR is a modified digital voice recorder that periodically records brief snippets of ambient sounds. Participants wear the EAR attached to their belt or in a purse-like bag while going about their daily lives. In recording moment-to-moment ambient sounds, the EAR yields permanent acoustic logs of people's days as they naturally unfold. In sampling only a fraction of the time instead of recording continuously, the EAR makes large-scale nomothetic observational studies possible (e.g., Mehl, Vazire, Ramírez-Esparza, Slatcler, & Pennebaker, 2007).

An important question around the EAR is how obtrusive the method is for participants in the natural pursuit of their daily lives. Ultimately, carrying around a recording device may bother participants to an extent that they decide to reactively change their behavior. In a recent study, however, Mehl and Holleran (2007) found converging self-report and behavioral evidence across two studies that after an initial habituation period (of about 2 hours), the EAR is generally perceived as minimally obtrusive and does not affect participants much in their daily behavior. For example, in their data, the average self-rated language behavior change ("To what extent did the microphone influence your way of talking?") was 1.5 on a scale ranging from 1 = *not at all* to 5 = *a great deal*. Further—as a behavioral marker of obtrusiveness—participants talked about the method in less than 5% of their interactions with others. Together, these data suggest that the EAR operates fairly unobtrusively in participants' daily lives.

The EAR can be used to obtain behavioral observation data both within and across cultures. For example, in a series of studies, Mehl and his colleagues have used the EAR to establish different aspects of the reliability (e.g., temporal stability, cross-situational consistency) and validity (e.g., association with personality self-reports and observer-ratings of personality) of different daily behaviors in within-culture samples of American students (Mehl, 2006; Mehl, Gosling, & Pennebaker, 2006; Mehl & Pennebaker, 2003; Vazire & Mehl, 2008). The EAR, though, can also be used to obtain cross-cultural data. An important advantage of such an approach is that when the sampled ambient sounds are coded for daily behaviors at a concrete, molecular level (compared to an abstract, molar level; cf. Funder, Furr, & Colvin, 2000; Vallacher & Wegner, 1985), cultural differences in the psychological interpretation of behavioral acts are minimized. For example, although the nature and interpretation of sociability can well differ across cultures, the amount of time a person spends alone or talking to others are concrete, molecular—and yet psychologically relevant—behaviors that can be assessed with minimal ambiguity and maximal validity and equivalence across cultures. Further, behavioral EAR assessments fully bypass self-reports (Block, 1989) and therefore avoid potential problems associated with response biases and questionnaire translations. Finally, although the EAR approach is clearly limited in the kinds of behaviors that can be coded from the ambient sounds, the fact that it produces a representative verbatim sample of participants' natural conversations makes it close-to-ideally suited for the study of everyday social interactions and sociability (Mehl, 2007).

1.2. Research questions

This investigation addressed three research questions. First, to what extent do Mexicans and Americans differ in how sociable they consider themselves to be? We hypothesized that we would replicate previous findings that Mexicans see themselves as less sociable than Americans. Similar to past research, we tested this hypothesis using assessments of sociability via standard self-report questionnaires.

Second, to what extent do Mexicans and Americans differ in how sociably they behave in their daily lives? Since there is no research that has assessed sociability via objective behavioral observation in Mexicans and Americans, we cannot form strong predictions as to how the groups will differ. We might find that the differences in social behaviors match the differences obtained in self-reports (McCrae et al., 2005). Or, in line with recent research by Heine and colleagues (2008) we may find that behavioral and self-report assessments yield different pictures with the behavioral findings mapping better onto prevalent cultural stereotypes—in our case that Mexicans behave more sociably than Americans.

We tested this research question using behavioral assessments of sociability derived from the EAR-records of participants' ambient sounds (e.g., time spent alone vs. talking to others).

Finally, to what extent do Mexicans and Americans differ in the ways they behave sociably? Sociability is a personality dimension that is generally considered to be largely universal (e.g., McCrae et al., 1997). However, behavioral expressions of this trait can differ across cultures. As noted by McCrae and Costa (1999), how "Conscientiousness is expressed in Italy is likely to be very different from how it is expressed in Iran. Ethnographic methods might be needed to identify the culturally prescribed forms in which personality factors are manifested" (p. 149). Although the EAR is not a standard ethnographic method, it is capable of tapping a wide range of naturalistic social behaviors, giving us the opportunity to study how sociability is displayed in the two cultures. Again, given the lack of prior research on the topic, it would be premature to form strong hypotheses about specific daily behaviors. Broadly speaking, though, we expected that Mexicans and Americans will both behave sociably in ways that are consistent with their dominant cultural self-construals.

The individualism–collectivism dimension is one of the most widely used constructs to classify cross-cultural behaviors (Hofstede, 1980; Triandis, 1995). Mexico and the United States are countries that have both been clearly identified as collectivist and individualist, respectively. According to Hofstede's (1980) ranking of 50 countries along the individualism–collectivism continuum, the US ranked 1st and Mexico 31st. Moreover, it is well-known that in individualistic cultures an independent self is promoted, whereas in collectivistic cultures an interdependent self is promoted (Markus & Kitayama, 1991). How do Mexicans express sociability in their everyday lives? Markus and Kitayama (1991) write "although people everywhere must maintain some relatedness with others, an appreciation and a need for people will be more important for those with an interdependent self than those with an independent self" (p. 229). We therefore predicted—or speculated in an exploratory way—that Mexicans will socialize by being close to or surrounded by other people. In other words, we predicted that compared to Americans, Mexicans will have more immediate social interactions with people who are physically present. We further predicted that Mexicans will socialize more in places where they can be with friends, classmates, and surrounded with people, that is in non-private environments (e.g., restaurants, in class, in the hallways on campus).

On the other hand, how might Americans display their sociability? According to Markus and Kitayama (1991), the independent self is manifested by a sense of separateness from other people, and it values its privacy (see Oyserman et al., 2002). Thus, we predicted—or speculated in an exploratory way—that Americans will socialize more in solitary or remote ways, and more in private environments. For example, perhaps compared to Mexican participants, American students would have more social interactions in a private context such as in their home, and talk more often to others over the phone or by computer.¹ In other words, we tested for the possibility that the objective, molecular daily behaviors that make up sociability may differ from one culture to the other and consistent with cultural differences in self-construal.

¹ We interpreted that American participants used the computer largely to "socialize" with others, given that computer-mediated communication is the primary means of computer use in the US. For example, the US Census (2003) reports that 89.0% of Americans use the computer to access the internet and e-mail, but only 11.6% use the computer to complete school assignments. In contrast, the Mexican Census (2006) reports that 59.2% of Mexicans use the computer for word processing tasks, but only 13.8% use it for e-mail. Together, these data suggest that when the EAR captures American participants using the computer, it is highly likely that it does so in the context of computer-mediated communication.

2. Method

2.1. Participants and procedure

The American sample ($N = 96$) was taken from a study reported in Mehl et al. (2006). For the purposes of this study, only the subsample of 54 (25 men, 29 women) monocultural University of Texas at Austin students was retained for the analyses (i.e., we excluded foreign or bi-cultural participants, such as Mexican-American or Korean-American). Their mean age was 18.8 ($SD = 1.0$). The Mexican participants were 46 students (20 men, 26 women) from the Autonomous University of Nuevo Leon, in Monterrey, Mexico. Their mean age was 18.0 ($SD = 1.6$).²

American participants wore the EAR continuously for two weekdays during their waking hours. Mexican participants wore the EAR continuously for two weekdays and over the weekend. For the purpose of this study, we only analyzed the weekday data from the Mexican sample to maximize comparability to the American sample.³ Participants were encouraged to wear the EAR as much as possible and to remove it only when the proper functioning of the device was jeopardized. To increase the reliability of the codings, participants were also asked to keep an end-of-day diary where they documented major activities of the day and times when they were unable to wear the EAR. The recorder was then activated and handed to participants in a sealed case.

2.2. Assessment of participants' self-reported sociability

Self-reported Sociability was measured by averaging all Extraversion items of the Big Five Inventory (BFI) in English (John & Srivastava, 1999) and in Spanish (Benet-Martínez & John, 1998). We also averaged only those items that tap the narrower trait of sociability. These items were: *is talkative; is reserved; tends to be quiet; is outgoing*. The reliability for the Extraversion and Sociability items was .90 and .87, respectively, for the American sample, and .76 and .71, respectively, for the Mexican sample.

2.3. Assessment of participants' behavioral sociability

2.3.1. EAR system

The EAR system consisted of a digital audio recorder (SONY Memory Stick ICD-MS1), an external microphone (OPTIMUS Tie Clip Microphone), and a controller microchip (Mehl et al., 2001). The chip was programmed with a 30 s on and 12.5 min off cycle producing 4.8 sound recordings per hour. Participants carried the EAR around in a shock-protected case in one of their pockets or in a purse-like bag. An external microphone was clipped to the collar of their shirts. It was impossible for participants to sense when

² Originally, the American sample consisted of 59 and the Mexican sample of 51 participants. However, 4 American participants were removed from the analyses due to the fact that their data were collected during the summer. Preliminary analyses have revealed that student participants during summer sessions differ from students in regular semesters (e.g., compared to regular spring or fall semester participants, summer session participants tend to spend more time alone). Six additional subjects (1 of the 55 American participants and 5 of the 51 Mexican participants) were removed from the analysis because the EAR provided fewer than 50 sound files due to technical problems (i.e., unreliable triggering, insufficient battery power, or microphone malfunctioning).

³ Note that to capture participants' habitual level of sociability, longer EAR recording periods are certainly preferable. However, prior research has repeatedly shown that two-day EAR-monitorings can provide highly reliable and valid information about participants' habitual daily lives. For example, Mehl and Pennebaker (2003) found that the amount of time participants spent talking to others and socializing (assessed from monitoring over two weekdays) had test-retest reliabilities of $r = .63$ and $.73$ over a period of 4 weeks. Further, Mehl and colleagues (2006) showed that two days of monitoring were sufficient to produce moderate to strong correlations between participants' EAR-assessed behaviors and aspects of their personalities (e.g., talking and Extraversion).

the EAR was recording. Further information on the EAR, including a discussion of the ethics of the method and our privacy and confidentiality policies, is provided by Mehl (2007) and Mehl and Holleran (2007).

2.3.2. Compliance

Across all American participants, the EAR recorded a total of 12312 sound files. Of these files, 4348 (35%) were coded as sleeping, yielding 7964 daytime recordings. On average 13% ($SD = 15\%$) of participants' daytime recordings were coded as invalid and dropped from the analysis (i.e., not wearing the EAR, insufficient ambient sounds, and/or poor recording quality). Over the approximately 2-day monitoring period, then, the EAR provided, on average, 128 valid daytime recordings ($SD = 32$) per participant, reflecting an overall excellent compliance.

For the Mexican participants, the EAR recorded a total of 9137 sound files. Overall, 3132 (34%) were coded as sleeping, yielding 6005 daytime recordings. On average, 5% ($SD = 9.7\%$) of participants' daytime recordings were coded as invalid and dropped from the analysis. Over the two weekdays analyzed, then, the EAR provided an average of 124 valid daytime recordings ($SD = 25$) per participant, reflecting an equally high compliance rate.

2.3.3. Data preparation

Eight English speaking research assistants listened to the American participants' complete set of sound files, and coded each sound file into according to a revised version of the *Social Environment Coding of Sound Inventory* (SECSI; Mehl et al., 2006). The SECSI comprises four category clusters: (1) the person's current *location* (e.g., in apartment, outdoors, in transit), (2) *activity* (e.g., listening to music, on the computer, eating), (3) *interaction* (e.g., alone, talking, on the phone) and (4) *mood* (e.g., laughing, crying, sighing). The SECSI coding categories are non-exhaustive and non-mutually exclusive, that is coding categories only exist for acoustically detectable behaviors and several categories can apply within a single sound file (e.g., talking to physically present others while also being on the phone with another person; being on the computer with the TV on in the background). The research assistants used participants' end-of-day diaries to increase the accuracy of their judgments. For the purposes of this study we selected 11 categories from the SECSI (see next paragraphs).

Eleven Spanish-English bilingual research assistants coded the Mexican participants' set of sound files using identical procedures. Inter-coder reliabilities for the categories were determined from two sets of training EAR recordings independently coded by both the English-speakers coders (392 English sound files) and the Spanish-English bilingual coders (258 Spanish sound files). The average intraclass correlations based on a two-way random effects model (ICC [2, k]; Shrout & Fleiss, 1979) were .93 across the 11 English categories, and .82 across the 11 Spanish categories. Comparable intercoder reliabilities were obtained in other EAR studies (see, Mehl & Pennebaker, 2003; Mehl et al., 2006). The raw codings were then converted into relative time-use estimates by calculating the percentage of a person's valid waking EAR recordings in which a category applied (e.g., the percentage of recorded waking sound files in which the participant was talking with a group of people).

2.3.4. EAR-derived variables for behavioral sociability

Three SECSI variables were aggregated into a composite measure of behavioral sociability: the time participants spent not alone (reverse coding of category 'alone'), the time they spent talking to others (sometimes they were with other people but not talking), and socializing (defined as a non-instrumental social activity with the main purpose of 'hanging out' with others; note that the participant may or may not be talking; e.g., watching a

video with others). Each of these variables was selected according to the definition of Sociability as a core feature of Extraversion. We selected time spent 'with others' as a variable because previous research has found that extraverted individuals spend less time alone and more time with others (Emmons, Diener, & Larsen, 1986; Mehl et al., 2006). 'Talking' and 'socializing' were considered from the well-established fact that extraverts are talkative and sociable (Costa & McCrae, 1985). The composite measure of behavioral sociability showed good reliability in both the Mexican sample ($\alpha = .73$) and American ($\alpha = .85$). Furthermore, an exploratory principle components analysis showed that these indicators loaded all on a single (first) factor (variance explained in the American sample: 78%, and in the Mexican sample: 68%).

2.3.5. EAR-derived variables for expression of sociability

To test the idea that Mexicans who are presumed to have an interdependent self will prefer to socialize by being surrounded by other people, we considered the EAR-variables: percentage of time the participants spent talking one-on-one and in groups. Likewise, to test the idea that Mexicans will display their presumed interdependent self by socializing in non-private environments, we averaged the EAR-variables: time the participants spent talking in restaurants, bars/coffeeshops, in class, and in other public places (e.g., on the campus, at a grocery store). This variable was called public conversations.

To test the idea that Americans who are presumed to have the independent self will choose to socialize in a more remote way, we analyzed the EAR-variables: percentage of time in phone conversations and using the computer. Likewise, to test the idea that Americans will display their presumed independent self by socializing in more private environments, we analyzed the EAR-variable: percentage of time talking in the apartment/house, and we called this variable private conversations.

3. Results

3.1. Do Mexicans and Americans differ in how sociable they consider themselves to be?

To determine whether differences in self-reported Extraversion replicated previous findings, we computed mean differences in Extraversion for Mexicans and Americans. The results showed that Mexicans rated themselves as less extraverted than Americans, but not significantly so (Mexicans: $M = 3.36$, $SD = .71$ vs. Americans: $M = 3.58$, $SD = .92$, $t(98) = -1.33$, $p = .19$). Similarly, with respect to Sociability, Mexicans rated themselves as less sociable on the 4 BFI Sociability items than Americans, but again not significantly (Mexicans: $M = 3.35$ vs. Americans: $M = 3.59$, $SD = 1.01$, $SD = .88$, $t(98) = -1.23$, $p = .22$).

Although the difference between Mexicans and Americans in our sample failed to meet conventional thresholds for statistical significance for both Extraversion and the more narrowly defined trait of Sociability, it is important to note that (a) the means were in the predicted direction, (b) the effect size of the difference in Extraversion in this study (i.e., $d = .27$) was comparable to the effect size of the difference for Extraversion (i.e., $d = .25$, $p < .05$) reported by Ramírez-Esparza et al. (2006), and (c) the self-reported difference for the single item "I see myself as a person who is talkative" is significant; Mexicans see themselves as significantly less talkative than Americans (Mexicans: $M = 3.28$ vs. Americans: $M = 4.00$, $SD = 1.23$, $SD = 1.29$, $t(98) = -2.84$, $p < .01$). Consequently, we conclude with respect to our first research question that in our small sample we tentatively replicated prior research showing that Mexicans consider themselves to be less sociable than Americans.

3.2. Do Mexicans and Americans differ in how sociably they behave in their daily lives?

To test whether Mexicans and Americans differ in terms of Sociability at the *behavioral* level, we tested for mean differences on our EAR-derived Sociability composite measure. The results showed that Mexicans behaved more sociably than Americans in their daily lives (Mexicans: $M = 33.27$, $SD = 13.63$ vs. Americans: $M = 22.64$, $SD = 10.02$, $t(98) = 4.49$, $p < .001$). This effect was not only significant but also substantial in magnitude ($d = .89$, $p < .001$). On the level of the individual behavior, for example, Mexicans spent almost 10% (i.e., more than a quarter) more time talking with others than Americans ($M = 43.16$, $SD = 13.83$ vs. $M = 34.27$, $SD = 12.68$, $t(98) = 3.35$, $p < .001$; $d = .67$, $p < .001$).

In contrast to what we—at least descriptively—found for self-reported Sociability, we find robust evidence that Mexicans behaved more sociably (e.g., talked more, spent more time socializing) than Americans in their daily lives. Not surprisingly, correlations between behavioral Sociability and self-reported Extraversion and self-reported Sociability were small and not significant, especially in the Mexican sample (i.e., in the Mexican sample Pearson correlation = .13 and .18, respectively; in the American sample Pearson correlation = .20 and .22, respectively). These results parallel those found by Heine and colleagues (2008) where self-reported Conscientiousness did not correlate with markers of Conscientiousness such as postal worker's speed, clock accuracy, and walking speed.

3.3. Do Mexicans and Americans differ in the ways they behave sociably?

To test whether Mexicans who are presumed to have an interdependent self prefer to socialize by being close to others and in less private environments, we compared mean differences in percentage of time Mexicans and Americans spend talking one on one, in groups, and in public environments. In order to test if Americans who are presumed to have an independent self prefer to socialize in a more remote way and in private environments, we compared mean differences in percentage of time Mexicans and Americans had phone conversations, used the computer, and talked in private environments (i.e., in the house or in the apartment). As shown in Fig. 1 the results supported our predictions for both the Mexicans and the Americans. These findings support the idea that expressions of sociability differ across cultures (McCrae et al., 1999) and that these differences reflect conceptions of the interdependent-independent selves.

4. Discussion

Stereotypes about Mexicans and Americans suggest that Mexicans are more sociable in their daily lives than Americans. However, in personality questionnaires, Mexicans consistently report being less sociable than Americans (McCrae, 2001; McCrae et al., 2005; Ramírez-Esparza et al., 2006). In this investigation, we attempted to resolve this paradox by directly contrasting how Mexicans and Americans see themselves in self-reports with how they behave in their daily lives. As Baumeister and colleagues (2008) have argued, in a time where the field of personality and social psychology is experiencing an “eclipse of behavior” (p. 396), investigations on how people actually behave in their natural environments are sorely needed because they have the potential to provide insights into psychological phenomena that would otherwise be impossible to obtain.

Using the EAR as a behavioral observation sampling method, we found that, although Mexicans reported—descriptively—being less sociable than Americans, they clearly and significantly behaved more sociably than Americans in their daily lives. Furthermore, consistent with the notion that cultural differences in self-construals can shape the ways in which individuals socialize, we found that Mexicans displayed their more interdependent self by socializing more in immediate and public ways (having more in-person and public interactions) and that Americans displayed their more independent self by socializing in more remote and private ways (having more computer-mediated and private interactions).

4.1. Do Mexicans and Americans differ in how sociable they consider themselves to be?

Whereas we found the expected Extraversion/Sociability difference between Mexicans and Americans only at a descriptive level (cf. Schmitt, Allik, McCrae, Benet-Martínez, et al., 2007), we did find that Mexicans reported being significantly less talkative than Americans. Given that our behavioral measures yielded opposite findings and given that Heine and colleagues (2008) have recently provided more evidence for a systematic discrepancy between self-report and behavioral assessments in research on cultural stereotypes and personality differences, it is particularly relevant to ask why in this and previous studies, self-reports failed to capture that Mexicans may in fact be *more* sociable than Americans. One possibility is that personality questionnaires such as the BFI are subject to translation artifacts. The translation artifact argument suggests that self-reported sociability across cultures reflects differences

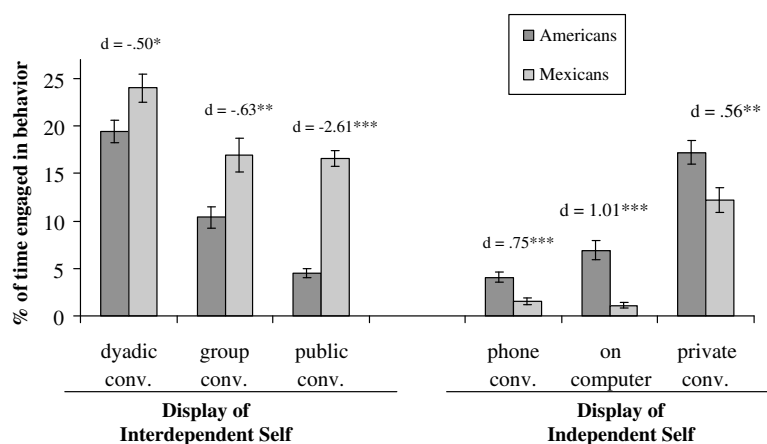


Fig. 1. Mexicans and Americans sociability: expressions of interdependent vs. independent self-construals in participants' daily social behavior. Note: 'on computer' indicates the percentage of time the participants were using the computer; the other categories indicate the percentage of time the participants were talking in groups, in dyads, in the phone, in public places, and in private places; error bars indicate Standard Error of Means; conv. = conversations; d = effect size estimate (Cohen's d); * $p < .05$; ** $p < .01$; *** $p < .001$.

in translations and not real self-perceptions of sociability. Items from the BFI were used in this study because they had been carefully translated from English to Spanish, with strong evidence for cross-language equivalence (Benet-Martínez & John, 1998). Moreover, item-bias analyses (van de Vijver & Leung, 1997a, 1997b) showed that the English and Spanish items did not have different psychometric item characteristics across the two languages (Ramírez-Esparza et al., 2006). Thus, it is highly unlikely that a translation artifact can explain the findings.

Another phenomenon that can potentially account for these differences is the *reference group effect* (Heine et al., 2002). According to the reference group effect, comparison of mean trait levels across cultures can be problematic and potentially invalid because when individuals complete questionnaires they engage in within-culture social comparisons—in other words, they use their cultural peers as a reference group. Perhaps, then, our—on average highly sociable—Mexican participants compared themselves to other—on average highly sociable—Mexican peers and thereby come to the conclusion that they are not particularly sociable which could effectively lead to lower self-ratings. Likewise, our—not so sociable—American participants may have compared themselves to other—not so sociable—American peers and thereby come to the conclusion that they are apparently quite sociable which could lead to higher self-ratings. This possibility should be examined in future studies.

Finally, a third possible answer to the question is that cultural differences in self-presentational biases may be driving the effect. For example, it is well-known that Americans show a self-enhancement bias when responding to self-reports (Heine & Lehman, 1997; Heine & Renshaw, 2002), especially when responding to highly social desirable traits such as Extraversion (Paulhus, Bruce, & Trapnell, 1995). Thus, it is possible that Americans tend to score higher than or similar to Mexicans because their scores are to some extent inflated by a tendency to self-enhance. Likewise, Mexicans when responding to social desirable traits may be manifesting a modesty bias (Ramírez-Esparza et al., 2008). Such a response bias could lead to artificially low scores. This idea suggests that perhaps Americans' and Mexicans' self-views interact with aspects of cultural norms, such as self-enhancement and modesty. Clearly, more studies are needed to test this idea.

4.2. Do Americans and Mexicans differ in how they behave sociably in their daily lives?

We found that Mexicans behaved more sociably than Americans in their daily lives. Thus, in this study we found mean differences in social behavior to map onto stereotypically perceived differences between countries. Indeed, other studies that have measured behavior directly as compared to via self-reports have found that cultural stereotypes do in fact hold at least a kernel-of-truth. For example, Levine and Norenzayan (1999) obtained a pace index (average of walking speed, postal speed, and clock accuracy) from 31 cultures; their behavioral indices showed that pace of life was entirely consistent with cultural stereotypes; Switzerland had the fastest overall pace and Mexico had the slowest. Likewise, Heine and colleagues (2008) reported that the behavioral indices from Levine and Norenzayan's study did not correlate with self-reported conscientiousness, but do correlate with perceptions of national character. Given our relative small sample size, however, it is imperative, that the results from our first and to some extent exploratory investigation be replicated in larger samples of Mexicans, and in other Hispanic/Latino cultures. In other words, future research should analyze *behavioral* differences in multiple cultures, and especially in those cultures for which evidence of *self-reported-personality* differences have been confirmed (e.g., McCrae, 2001; Schmitt et al., 2007; Terracciano et al., 2005).

4.3. Do Americans and Mexicans differ in how they behave sociably?

We found that Mexicans and Americans differed in the ways in which they behaved sociably and we proposed that these differences may be a reflection of cultural differences in interdependent vs. independent self-construal. One could argue, however, that these behavioral differences are the result of mere environmental differences rather than being behavioral expressions of the self (Rozin, 2003). For example, perhaps people in the US have easier access to cell-phones and computers; perhaps classrooms in Mexico are more crowded. This is certainly a possibility. Personality is constituent of its surrounding cultural context—including cultural artifacts—suggesting that they are difficult to separate (Markus & Kitayama, 1998; Rentfrow, Gosling, & Potter, 2008; Shweder & Sullivan, 1990). Does this mean that Mexicans living in the US will behave in ways that reflect more of an independent self? This is an interesting empirical question and a question that we have very preliminary data on. In a pilot study using the EAR, Mexican-Americans living in the US tended to socialize more like the Americans than like the Mexicans in the sample reported here (Kim, Ramírez-Esparza, Mehl, & Pennebaker, 2006). Conversely, how would Americans living in Mexico behave? Systematically studying individuals who migrated in one direction or the other would be a fascinating avenue for future research and could shed important light on how culture and its social environments and artifacts influence personality.

4.4. Limitations and future directions

In this investigation, the EAR was a valuable tool to compare behaviors that are fairly overt and molecular, minimizing differences in interpretations across cultures (e.g., talking is talking across cultures). However, other social behaviors could have been overrepresented or underrepresented (e.g., using the computer to chat vs. to write a letter). Future observational studies using the EAR could benefit from using a retrospective fixed-format diary technique (e.g., Wheeler, Reis, & Bond, 1989) where students could report on aspects of their social life that are less apparent in the EAR (e.g., if they used the computer, what percentage of time it was used to chat with others).

Future research could examine the connection between behavioral sociability and subjective well-being across cultures. For example, Mexicans report being as "happy" as Americans despite large differences in the annual per capita income between the two cultures (Layard, 2005). It may be that sociability buffers the pressure of not being a wealthy/developed country. After all, being a sociable person predicts resistance to the cold virus (Cohen, Doyle, Turner, Alper, & Skoner, 2003).

Heine and colleagues (2008) say "Other criteria, particularly those that do not rely on self-reports measures, are needed to validate cross-national comparisons of personality traits" (p. 310). Here, we introduce a way to measure sociability through everyday social behaviors. However, in future studies other methods could be used for converging evidence. For example, analyses to free responses to vignettes about hypothetical social behaviors (e.g., Triandis et al., 1984; Varela et al., 2004) and to open-ended self-descriptions (e.g., Ramírez-Esparza, 2007) could provide additional information about the manifestations of interdependent-independent self-construals. Clearly, researchers need to rely on innovative behavioral methods to resolve the paradoxes so prevalent in cross-cultural research.

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