

Original Article

Solutions to the Problem of Diminished Social Interaction

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Abstract: Social animals, like humans, need to interact with others, but this is not always possible. When genuine social interaction is lacking, individuals may seek out or use sources of interaction that co-opt agency detection mechanisms vis-à-vis the human voice and images of people, called social snacking. Study 1 ($N = 240$) found that ratings of how alone participants felt were correlated with frequency of talking to themselves and using the TV for company. Study 2 ($N = 66$) was a daily diary study where loneliness was correlated with both Study 1 behaviors and singing to oneself. These solutions essentially trick the person's brain into feeling like they are socially interacting, thus, appeasing the relative dependence humans have on social interaction. Social snacking may satisfy one's need for social interaction because humans are unlikely to be able to differentiate between virtual and real people because this distinction did not exist in ancestral environments.

Keywords: agency detection, social snacking, evolutionary psychology, loneliness

Introduction

Limited social contact is problematic to any social species. When people lack social contact they have psychological and health dysfunctions (Bowlby, 1988; Hazan and Shaver, 1994; Perlman and Peplau, 1984). These dysfunctions often manifest themselves in the form of depression, grief, anxiety, and loneliness (Baumeister and Tice, 1990; Leary, 1990). People have a fundamental need for affiliation that stems from the benefits of group living (Baumeister and Leary, 1995). Being lonely and alone appears to have both biological and social components (Gruter and Masters, 1986) and both cause psychological discomfort (Jones, Freeman, and Goswick, 1981) like ostracism (Williams, 2007).

What does one do when they feel alone or lonely? Individuals may attempt to buffer themselves from these feelings by seeking out activities and interaction partners that remind them of social connections, or what is being called “social snacking” (Gardner, Pickett, and Knowles, 2005; Twenge et al., 2007). For instance, looking at memorabilia that conjures up memories of loved ones makes aged people feel less lonely (Sherman, 1991). Furthermore, the degree to which individuals anthropomorphize their pets is a function of how lonely they are (Epley, Waytz, Akalis, and Cacioppo, 2008). Individuals seek out reminders that they have social lives when not immersed in them at that time. Social snacking is one solution to the problems created by the relative dependence on maintaining social bonds that people have. However, traditional work on social snacking has not provided good evolutionary accounts of why social snacking might work. The current study examines the associations between social snacking and rates of diminished social interaction from an evolutionary perspective.

From an evolutionary perspective, social snacking might work because it activates agency detection mechanisms (for review see, Barrett, 2005). In a world where there are numerous stimuli, agency detection mechanisms allow one to focus on certain features as heuristics in processing. For instance, hearing rustling in the bushes may activate predator-detection mechanisms that cause a flight response whether or not the rustling is actually caused by a predator. In the case of social snacking, features like the human face and voice may provide the appropriate cues that activate these agency detection mechanisms that tell individuals they are not alone.

For social snacking to function through cues to agency, types of social snacking should be characterized by cues to agency. Individuals give their pets personalities and think of their pets as people when they are lonely, thus creating cues to agency (Epley et al., 2008). We investigate two other types of social snacking. Talking to oneself and watching TV offer cues to agency but have rarely been studied as either social snacking or from an evolutionary perspective. Talking to oneself and watching TV may co-opt (for a review see, Buss, Haselton, Shackelford, Bleske, and Wakefield, 1998) the mechanisms that correspond to genuine social interaction because it shares some of the same features as genuine social interaction: human agents talking. This co-option likely mimics enough of the features of genuine social interaction that individuals’ need for social interaction is appeased, perhaps to a lesser degree than the genuine article (Rosengren and Windhal, 1972). It likely works because evolved psychological mechanisms have difficulty differentiating between types of entities people did not reliably encounter in ancestral times (Kanazawa, 2002).

Most research on talking to oneself and watching TV has utilized proximate models. Research suggests that self-talk can (1) decrease anxiety (Conroy and Metzler, 2004; Gould, Finch, and Jackson, 1993; Page, Sime, and Nordell, 1999), (2) increase goal attainment (Green, Hall, and Erickson, 1995; Hardy, Gammage, and Hall, 2001; Johnson, Hrycaiko, Johnson, and Halas, 2004; Van Raalte, Cornelius, Brewer, and Hatten, 2000), (3) increase self-esteem and decrease depression (Philpot and Bamburg, 1996; Philpot, Holliman, and Madonna, 1995), (4) enhance self-knowledge and is related to self-consciousness (Schneider, 2002), and (5) be useful in treating social maladjustment (Calvete and Cardenoso, 2002). This research, in sum, suggests that talking to oneself may be a solution that people use to deal with their problems.

Research in mass media and communication has also come from more proximate theoretical positions. Individuals may use media, such as TV, as a means, in part (Rosengren and Windahl, 1972), to deal with their lack of social contacts (Giles, 2002; Rubin, 1981, 1983; Rubin, Perse, and Powell, 1985; Nordenstreng, 1970). Some people may use the TV as a means by which they can escape from the troubles of their day-to-day life (McQuail, Blumler, and Brown, 1972) and much more (for review see, McQuail, 1972). People develop parasocial or virtual relationships with TV characters. For instance, individuals who are lonelier will form parasocial relationships with news broadcasters (Rubin, Perse, and Powell, 1985). Social facilitation occurs on well-learned tasks when participants did these tasks in the “presence” of their favorite TV characters (Gardner and Knowles, 2008). While it may be true that individuals have become disengaged from real life by watching too much TV (Putman, 2000), individuals who watch more TV reported more satisfaction with their social lives than those who did not watch as much of certain genre of programming; people fail to distinguish between real friends and parasocial friends (Kanazawa, 2002). This suggests that people lump real friends and parasocial friends together when considering their social network.

The current studies capitalize on the adaptationist paradigm to reframe the emerging discipline of social snacking. Study 1 is a single-shot, correlational study, whereas Study 2 is based on longitudinal data. Both studies focus on how social isolation is correlated with rates of social snacking. Social snacking tends to be characterized by cues to agency and thus, we conceptualize social snacking as working through agency detection mechanisms.

Study 1

In Study 1, we examine the correlations between self-talk, turning the TV on for company along with one measure of social isolation: rates of being alone. This is an initial study to examine the relationship between social isolation and potential measures of social snacking. We predict that rates of self-talk and TV for company will be positively correlated with rates of being alone.

Methods

Participants

Two hundred forty undergraduates (49% female) ranging in age from 18 to 65 years ($M = 20$, $SD = 7.8$) enrolled in psychology and communication classes at a large public university in the Northeastern U.S. received extra credit for their voluntary participation.

Measures

Participant’s frequency of being alone was measured with four items (1 = *not at all*; 5 = *very much*). Two items asked participants how frequently they were alone and how alone they were. Two more questions asked how much participants agreed with the statements: *I am often alone* and *I am frequently by myself*. These items were averaged to create an index of the frequency of being alone (Cronbach $\alpha = .91$; $M = 2.28$, $SD = 1.64$).

Participant’s use of self-talk was a five-item measure (1 = *not at all*; 5 = *very much*). Participants were asked how much they did the following: (1) I speak to myself out

loud, (2) I talk to myself, (3) I talk to myself out loud, (4) I speak to myself, and (5) I put my thoughts into words. These items were averaged to create an index of the amount of self-talk ($\alpha = .82$; $M = 2.70$, $SD = .96$).

TV use was a four-item measure (1 = *not at all*; 5 = *very much*). Participants were asked how much they did the following: (1) I turn the TV on when I get home, (2) I often have the TV on, (3) even if I am not watching it, the TV is on at my home, and (4) I do not always watch the TV when it is on. These items were averaged to create an index of TV-usage ($\alpha = .74$; $M = 3.04$, $SD = 1.01$).

Results

Rates of aloneness were correlated with self-talk ($r(233) = .17$, $p < .05$) and TV use ($r(234) = .24$, $p < .01$). Self-talk and TV usage ($r(234) = .23$, $p < .01$) were also correlated. No other significant relationships or differences were found. Women were marginally more likely to talk to themselves than men ($t(232) = -1.77$, $p < .08$).

Discussion

Being alone appears to be correlated with rates of self-talk and using the TV for company. Results confirmed our contention that when alone, individuals seek out replacements for social interaction that mimic genuine social interaction.

Study 2

In Study 1 we considered how rates of being alone related to TV usage and talking to oneself. Next we will address both rates of being alone and rates of loneliness in a daily diary study. This study addresses three questions. First, what were the relationships between daily measures and trait-level measures of loneliness? Second, what were the relationships between daily aloneness and other daily measures? Third, did these within-person relationships vary as a function of trait-level characteristics such as participant sex, loneliness (Russell, 1996), and people's tendency to form "friendships" with TV characters or parasocial interaction (Rubin, Perse, and Powell, 1985)? We also expand our examination to include another type of social snacking: singing to oneself.

In Study 1, we found that women were slightly more likely to use self-talk than men. This finding is consistent with prior work that suggests that women feel a need to maintain more closely bonded relationships than men (Buhrke and Fuqua, 1987). If women feel they need to maintain more intimate social connections, then they may be more likely to social snack than men. In the past, such a sex difference has been seen in research that makes the distinction between positive and negative self-talk (Tamres, Janicki, and Helgeson, 2002); women appear to use negative self-talk more than men. We predict sex differences in self-talk in general and in negative self-talk, such that women will use negative and general self-talk more than men.

Methods

Participants

Sixty-six students (76% female) ranging in age from 19 to 47 years ($M = 23.88$, $SD = 5.70$) enrolled in communication classes at a large public university in the Southwestern U.S. received extra credit their voluntary participation.

Procedure

A daily diary measure was distributed to the participants. This packet contained an informed consent and the measures to be discussed below. All but the Loneliness Scale and Parasocial Interaction Scale were included in the daily diary portion. Participants reported their responses to the daily diary items across four days. At the end of the four days participants turned in the packet and were thanked and debriefed.

Trait measures

The UCLA Loneliness Scale (Russell, 1996) was used to measure loneliness. This scale was only presented once to the participants before they completed the daily diary measures as discussed below ($\alpha = .92$).

Parasocial interaction ($\alpha = .88$) was measured using a modified version of Rubin, Perse, and Powell's (1985) measure by making the items not specific to news-viewing but TV viewing in general. For instance, participants were asked how much they agreed with statements such as: "I see my favorite TV personality as a natural, down-to-earth person" and "I miss seeing my favorite TV personality when he or she is not on TV."

Daily measures

All daily items were averaged into their respective measures to create daily mean scores. Daily *aleness* (test-rest reliability = .76) was measured using two items: "I have been alone a lot today" and "I felt very alone today." Daily *TV use for company* (test-rest reliability = .82) was also measured using two items: "The TV was on today although I did not really watch it" and "I turned the television on today mostly to just keep me company." Daily *self-singing* (test-rest reliability = .83) was measured using three items such as: "Today I sang to myself" and "I found myself singing to myself today."

Three types of daily self-talk were measured with four items each: general, positive, and negative. General *self-talk* (test-rest reliability = .79) was measured using items such as "I spoke to myself at least once out loud today" and "I talked to myself today." *Positive self-talk* (test-rest reliability = .85) was measured with items such as, "When I talked to myself out loud today, I praised myself" and "When I talked to myself out loud today, I congratulated myself." In contrast, *negative self-talk* (test-rest reliability = .86) was measured with items such as, "When I talked to myself out loud today, I chastised myself" and "When I talked to myself out loud today, I criticized myself." Descriptive statistics are reported in Table 1.

Table 1. Descriptive statistics

	Mean (SD)
1. Average amount of self-talk	2.78 (0.89)
2. Average amount of self-sing	1.92 (0.93)
3. Average amount of positive self-talk	2.56 (0.83)
4. Average amount of negative self-talk	2.27 (0.84)
5. Average amount of putting the TV on for company	2.35 (0.94)
6. Average amount of being alone	4.17 (3.27)
7. UCLA loneliness	2.02 (0.48)
8. Parasocial interaction	2.79 (0.65)

Note. Participants reported frequency (1 = *not at all*; 5 = *very much*)

Results

Our questions of interest regarding daily (within-person) relationships took three forms. First, what were the relationships between daily measures and trait-level measures of loneliness? Second, what were the relationships between daily aloneness and other daily measures? Third, did these within-person relationships vary as a function of trait-level characteristics such as participant sex, loneliness, and parasocial interaction? To answer these questions, we first report bivariate correlations in Table 2.

Table 2. Correlation among trait variables and daily diary variables summed across four days

	1	2	3	4	5	6	7	8
1. Daily TV for company	--							
2. Daily self-talk	.44**	--						
3. Parasocial interaction ¹	.06	-.07	--					
4. Daily positive self-talk	.18	.46**	.12	--				
5. Daily negative self-talk	.45**	.44**	.12	.17	--			
6. UCLA Loneliness ¹	.26*	.29*	.02	-.22	.34**	--		
7. Daily aloneness	.27*	.31*	.06	-.23	.29*	.46**	--	
8. Daily self-sing	.25*	.55**	.01	.37*	.47**	.25*	.25*	--

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

¹ Trait variable

Next we conducted a series of multilevel random coefficient models (Raudenbush and Bryk, 2002) using the program Hierarchical Linear Modeling (HLM6; Raudenbush, Bryk, Cheong, and Congdon, 2004). In these analyses, daily observations were treated as nested within participants. In the terminology of multilevel modeling, daily measures were the level-1 units of analysis, and individuals were the level-2 units of analysis. These analyses were conducted following guidelines offered by Nezlek (2001). All state-level predictors were group-mean-centered, and all trait-level predictors were grand-mean-centered, except for participant sex, which was coded -1 (women) and 1 (men).

Solving loneliness

The first set of analyses consisted of what are called “totally unconditional” models, that is, analyses in which there are no predictors are either level 1 or level 2. Such analyses provide estimates of means as well as within- and between-person variance estimates. These models are presented below:

$$y_{ti} = \pi_{0i} + e_{ti},$$
$$\pi_{0i} = \beta_{00} + r_{0i}.$$

In these models, y is a dependent measure, taken t times (or days) for i individuals. The within-person variance is e_{ti} , and the between person variance is r_{0i} . The estimated mean for each of i persons is π_{0i} , and the grand mean for the sample is β_{00} (the between-person mean of the within-person means across time). The results of these analyses are summarized in Table 3. As can be seen from these variance estimates, there was a roughly equivalent amount of variance at the within- and between-person in all measures, suggesting that modeling both levels could be fruitful.

Table 3. Variance decomposition for Daily Measures

Variable	Variance decomposition		
	Between	Within	% Between
Daily alone amount	0.40	0.50	44.4
TV for company	0.61	0.53	53.5
Self-sing	0.86	0.68	55.7
Self-talk	0.61	0.66	48.0
Positive Self-talk	0.59	0.41	58.7
Negative Self-talk	0.59	0.39	60.1

Relationships between Mean Daily Measures and Trait Measures

Relationships between mean daily measures and trait loneliness and parasocial interaction were examined with a series of models that were unconditional at level 1 (the day level) and included traits as predictors at level 2 (the person level). In essence, these analyses estimated a mean for each person (averaging across four days) and then estimated relationships between these means and the trait measures. For example, to examine relationships between mean daily aloneness and trait loneliness, the following model was estimated:

$$\text{Daily aloneness}_{ti} = \pi_{0i} + e_{ti},$$
$$\pi_{0i} = \beta_{00} + \beta_{01}(\text{Trait loneliness})_i + r_{0i}.$$

In these models, the estimated daily aloneness means for each of i persons is π_{0i} , and β_{00} is the grand mean of the sample for the average person (when trait loneliness is zero). The random coefficient of interest here is β_{01} , which describes the relationship between the mean of each i person’s daily aloneness scores and her or his trait loneliness scores. As shown in Table 4, trait loneliness was significantly positively related to the mean of each daily measure except for positive self-talk. This suggests that chronically lonely people report more social snacking than those who are less chronically lonely. In contrast to loneliness, trait parasocial interaction was unassociated with the mean daily measures. Lastly, a significant sex difference was observed in one variable: Men reported more self-talk ($M = 3.09$) than women ($M = 2.66$; $\beta_{01} = 0.21$, $t(64) = 2.21$, $p < .05$, $r = .27$).

Table 4. Daily Measures as a Function of Loneliness

Variable	β_{0i}	$t(64)$	r
Daily alone amount	0.88	4.81**	.52
TV for company	0.52	2.19*	.26
Self-sing	0.48	2.02*	.24
Self-talk	0.53	2.44*	.29
Positive Self-talk	-0.36	-1.52	-.19
Negative Self-talk	0.64	3.17**	.37

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

Relationships between Daily aloneness and Other Daily Measures.

We next examined the within-person relationships between daily aloneness and other daily measures. For example, the within-person relationship between daily aloneness and self-talk was examined with the following model:

$$\text{Daily aloneness}_{ii} = \pi_{0i} + \pi_{1i}(\text{Daily self-talk})_{ii} + e_{ii}.$$

The test of whether this relationship was significantly different from zero (across all participants) was conducted at level 2 (the between-person level). These tests concerned the β_{10} coefficient from the following model:

$$\begin{aligned}\pi_{0i} &= \beta_{00} + r_{0i}, \\ \pi_{1i} &= \beta_{10} + r_{1i}.\end{aligned}$$

The random coefficient of interest here is β_{10} , which describes the mean of the within-person slopes across all participants. As can be seen in Table 5, daily aloneness was significantly positively related to every daily social snacking behavior except negative self-talk. This result suggests that the within- and between-person relationships between loneliness and social snacking behaviors are similar, which need not necessarily be the case, because these levels of analysis are mathematically independent.

Trait Moderation of Within-Person Relationships.

The following model examined sex differences in the within-person relationship between daily aloneness and daily self-talk:

$$\begin{aligned}\text{Daily aloneness}_{ii} &= \pi_{0i} + \pi_{1i}(\text{Daily self-talk})_{ii} + e_{ii}, \\ \pi_{0i} &= \beta_{00} + \beta_{01}(\text{Sex})_i + r_{0i}, \\ \pi_{1i} &= \beta_{10} + \beta_{11}(\text{Sex})_i + r_{1i}.\end{aligned}$$

Participant sex moderated the relationship between daily aloneness and daily self-talk ($\beta_{11} = -0.13$, $t(64) = -2.07$, $p < .05$, $r = -.25$; Figure 1a), such that women exhibited a significantly positive relationship ($\beta_{10} = 0.29$, $t(64) = 3.58$, $p < .01$, $r = .41$), whereas men exhibited no such relationship ($\beta_{10} = 0.04$, $t(64) = 0.44$, $p = .66$, $r = .05$).

Table 5. Daily aloneness as a Function of Other Daily Measures

Variable	β_{01}	$t(65)$	r
TV for company	0.36	4.64**	.50
Self-sing	0.14	1.97*	.24
Self-talk	0.22	3.35**	.38
Positive Self-talk	0.15	2.20*	.26
Negative Self-talk	0.04	0.42	.05

* $p \leq .05$. ** $p < .01$.

The following model examined the extent to which individual differences in parasocial interaction moderated the within-person relationship between daily aloneness and self-singing:

$$\begin{aligned} \text{Daily aloneness}_{ii} &= \pi_{0i} + \pi_{1i}(\text{Daily self-singing})_{ii} + e_{ii}, \\ \pi_{0i} &= \beta_{00} + \beta_{01}(\text{Parasocial interaction})_i + r_{0i}, \\ \pi_{1i} &= \beta_{10} + \beta_{11}(\text{Parasocial interaction})_i + r_{1i}. \end{aligned}$$

Individual differences in parasocial interaction moderated the relationship between daily aloneness and daily self-singing ($\beta_{11} = 0.21$, $t(64) = 2.16$, $p < .05$, $r = .26$; Figure 1b), such that people with high (+1 *SD*) parasocial interaction scores had a significantly positive relationship ($\beta_{10} = 0.29$, $t(64) = 2.83$, $p < .01$, $r = .33$), whereas people with low (−1 *SD*) parasocial interaction scores had no such relationship ($\beta_{10} = 0.02$, $t(64) = 0.28$, $p = .78$, $r = .03$).

The following model examined the extent to which individual differences in trait loneliness moderated the within-person relationship between daily aloneness and positive self-talking:

$$\begin{aligned} \text{Daily aloneness}_{ii} &= \pi_{0i} + \pi_{1i}(\text{Daily positive self-talk})_{ii} + e_{ii}, \\ \pi_{0i} &= \beta_{00} + \beta_{01}(\text{Trait loneliness})_i + r_{0i}, \\ \pi_{1i} &= \beta_{10} + \beta_{11}(\text{Trait loneliness})_i + r_{1i}. \end{aligned}$$

Individual differences in loneliness moderated the relationship between daily aloneness and daily positive self-talking ($\beta_{11} = 0.26$, $t(64) = 2.18$, $p < .05$, $r = .26$; Figure 1c), such that people with high (+1 *SD*) loneliness scores had a significantly positive relationship ($\beta_{10} = 0.25$, $t(64) = 3.50$, $p < .01$, $r = .40$), whereas people with low (−1 *SD*) loneliness scores had no such relationship ($\beta_{10} = -0.002$, $t(64) = -.02$, $p = .98$, $r = -.002$).

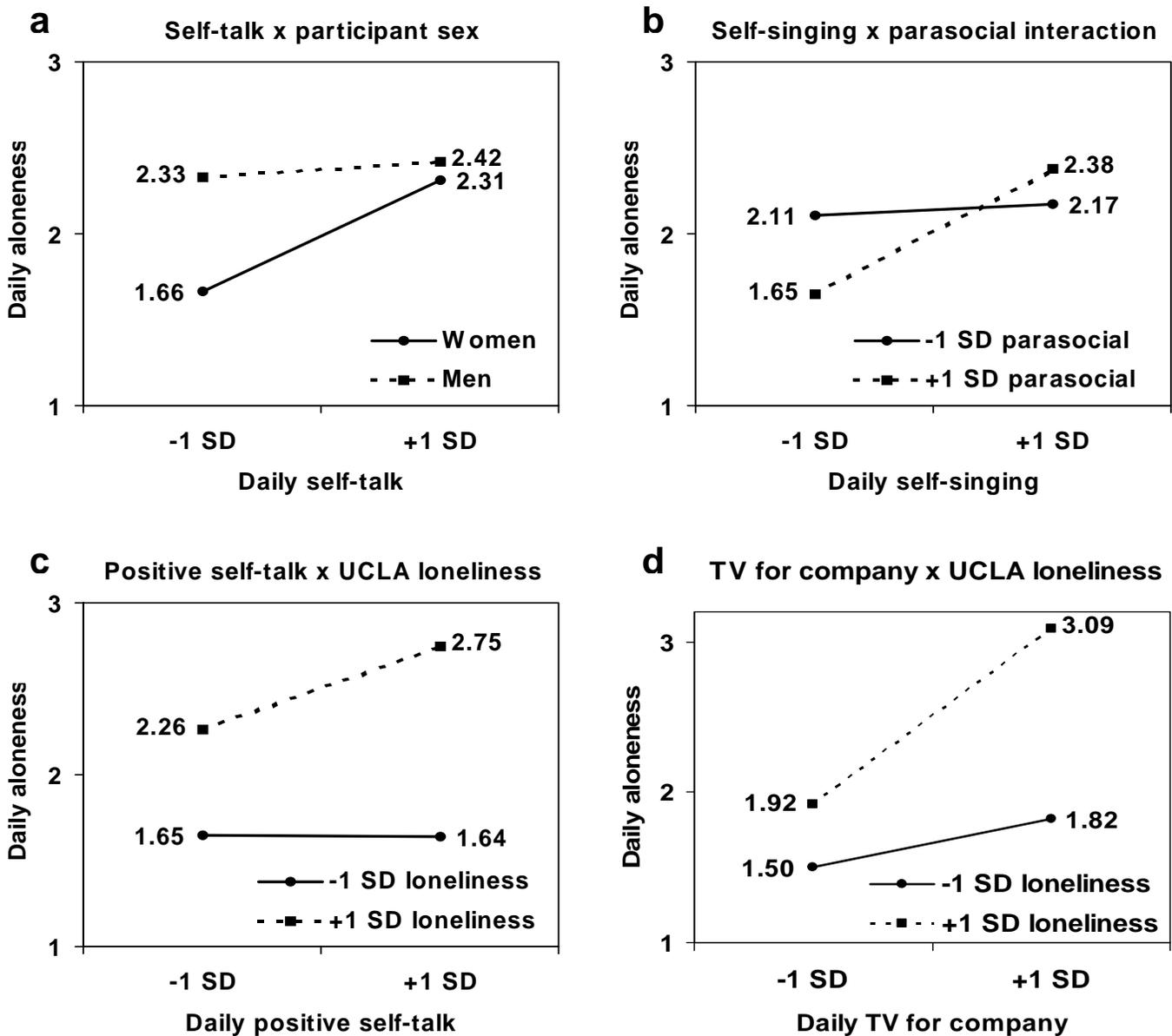
The following model examined the extent to which individual differences in loneliness moderated the within-person relationship between daily aloneness and watching television for company:

$$\begin{aligned} \text{Daily aloneness}_{ii} &= \pi_{0i} + \pi_{1i}(\text{Daily television for company})_{ii} + e_{ii}, \\ \pi_{0i} &= \beta_{00} + \beta_{01}(\text{Trait loneliness})_i + r_{0i}, \\ \pi_{1i} &= \beta_{10} + \beta_{11}(\text{Trait loneliness})_i + r_{1i}. \end{aligned}$$

Individual differences in loneliness also moderated the relationship between daily aloneness and daily television for company ($\beta_{11} = 0.42$, $t(64) = 3.04$, $p < .01$, $r = .36$; Figure 1d), such that people with high loneliness scores had a significantly positive relationship ($\beta_{10} = 0.55$, $t(64) = 5.67$, $p < .01$, $r = .58$), whereas people with low loneliness scores had no significant relationship ($\beta_{10} = 0.15$, $t(64) = 1.58$, $p = .12$, $r = .19$).

We have assumed that trait- and state-level measures of social isolation were measuring slightly different phenomena. Some researchers, however, have argued that aloneness and loneliness are not orthogonal, but instead highly related. For instance, Marcoen, Goossens, and Caes, (1987) argued that aloneness is a state but also simultaneously a trait. If these authors are correct, our results could be driven to some degree by multicollinearity between daily aloneness and loneliness. To insure that multicollinearity was not problematic in our study, we examined it, finding that it had little impact (Tolerance = .79, *VIF* = 1.27; see, Cohen, Cohen, West, and Aiken, 2003).

Figure 1. Daily aloneness as functions of (a) daily self-talk and participant sex, (b) self-singing and trait interaction, (c) positive self-talk and trait loneliness, and (d) TV for company and trait loneliness.



Discussion

In Study 2, we demonstrated that when individuals experience limited social interaction, they tend to seek out sources of stimulation that share features of genuine social interaction like the human voice and images of people. Being alone was associated with using the TV for company, singing to oneself, talking to oneself, and positive self-talk. Loneliness was significantly correlated with using the TV for company, singing to oneself, talking to oneself, and negative self-talk.

General Discussion

People have a relative dependence on social interactions (Baumeister and Leary, 1995), but people are not always able to find other people with which to interact. As substitutes, individuals may use pets (Epley et al., 2008) and other forms of social snacking (Twenge et al., 2007). Social snacking is a means by which people buffer themselves from an impoverished supply of social interactions. However, the research on social snacking provides limited theoretical justification for why it should work. We extend this work by positing that social snacking works through agency detection mechanisms. As such we proposed that social snacking should be characterized by cues to agency and that types of social snacking should be correlated with rates of being alone and lonely. Results mostly confirmed our predictions. We found that diminished social interaction was correlated with self-talk, self-singing, and using the TV for company.

We suggest that the manner in which social snacking buffers people from social isolation is through agency detection mechanisms activated by the human voice and face. Similar work has examined the degree to which individual anthropomorphize their pets as a function of their loneliness (Epley et al., 2008). The anthropomorphization of pets may allow the pet to function as a social agent that buffers from social isolation. Despite the limited usefulness of trait levels of parasocial interaction presently, research on parasocial interaction suggests that some individuals form friendships with TV characters as a response to being lonely (Cohen, 2001; Giles, 2002). These friendships have real effects in people's lives like social facilitation (Gardner and Knowles, 2008). Furthermore, individuals may immerse themselves in TV, like narrative fiction (Mar and Oatley, 2008), to make themselves feel as if they have a social network. Like a real-world friend, parasocial friends offer vocal/visual inputs to the receiver that activate agency detection mechanisms with the same cues that are activated in genuine social interaction. People are unlikely to be unable to differentiate between virtual humans and real humans because they have had no interactions with them during the ancestral environment that promoted the evolution of agency detection mechanisms (Kanazawa, 2002).

While both sexes are likely to experience social isolation and both need to solve this problem, it appears that women show a particularly strong relationship between daily self-talk and daily aloneness, whereas men show no such relationship on average. Our results suggest that when men and women have high levels of social interaction they rely similarly on social snacking (i.e., self-talk and TV watching). When experiencing low levels of social interaction, it is among women, that we found an increase in self-talk. In general, men appeared to use self-talk more than women but women appear to use it facultatively when they are experiencing higher rates of social isolation. This sex difference is consistent

with findings that women feel a need to maintain more closely bonded relationships than men (Buhrke and Fuqua, 1987) and may be related to their greater tendency to experience depression (Nolen-Hoeksema, 2001).

The present study is limited because it only assessed one form of media that could function as social snacking. Music and talk-radio both offer vocal cues to agency that might function as solutions to diminished social interactions. We feel that TV also offers images of agents who likely further activate the agency detection mechanisms that we refer to above. That said, while we feel that other forms of media may be worth exploring because they offer an agent-indicator (the voice), TV and film offer two, and thus, are likely to be the most informative regarding agency detection and solutions to diminished social interactions. An additional concern is the small sample of men in Study 2. Although we obtained some significant sex effects, these should be interpreted with caution. Further studies with more equal sample sizes will need to be performed before any conclusive inferences about sex differences can be drawn.

While the use of longitudinal data is a strength of this study, we feel that future experimental work could induce a sense of social isolation or ostracism and then test for these and other potential types of social snacking. In truth, social snacking has been traditionally studied with social isolation or ostracism (Williams, 2007) but we assessed it with rates of being alone and lonely. We would predict that when placed in social isolation or ostracized, some individuals should spontaneously begin to sing or talk to themselves and if given the opportunity to turn a TV on they would. In the absence of experimental studies, we feel that the triangulation of interdisciplinary studies and results are compelling. Evidence from this study is consistent with communication (e.g., Rubin, Perse, and Powell, 1985), psychology (e.g., Twenge, et al, 2007), and biology (e.g., Dunbar, 1996) research.

Words like “crazy” come to mind when people think of someone who talks to her or himself. Perhaps now we may recognize the person talking to her or himself is alone or lonely and, instead, see their need for a friend. It appears that watching TV, singing to oneself, and talking to oneself may be a partial remedy to diminished social interactions and thus can be considered forms of social snacking. Because they all are characterized by cues to agency like the human voice or face, we add that social snacking may work via agency detection mechanisms.

Received 25 August 2008; Revision submitted 17 October 2008; Accepted 21 November 2008

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