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Nonverbal Displays of Shame Predict Relapse and Declining Health in Recovering Alcoholics

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Abstract:

Public shaming has long been thought to promote positive behavioral change. However, studies suggest that shame may be a detrimental response to problematic behavior, as it motivates hiding, escape, and general avoidance of the problem. We tested whether shame about one's past addictive drinking (measured via nonverbal displays and self-report) predicts future drinking behaviors and changes in health among newly recovering alcoholics (i.e., sober <6.5 months; total *N*=105, Wave 2 *N*=46), recruited from Alcoholics Anonymous meetings. Results showed that nonverbal behavioral displays of shame expressed while discussing past drinking strongly predicted: (a) the tendency to relapse over the next 3-11 months, (b) the severity of that relapse, and (c) declines in health. All results held controlling for a range of potential confounders (e.g., alcohol dependence, health, personality). These findings suggest that shame about one's problematic past may increase, rather than decrease, future occurrences of problem behaviors.

States have long used punitive public shaming as a means of curbing bad behavior (Jacquet, 2011) and such institutionally sanctioned shaming practices remain common; examples include the state-wide issuance of marked license plates for individuals convicted of DUIs (Nussbaum, 2006) and on-line lists of non-compliant tax-payers (Jacquet, Hauert, Pizarro & Tracy, submitted for review). Supporting these measures, researchers have found that the experience of shame motivates individuals to improve their self-image (de Hooge, Zeelenberg & Breugelmans, 2011), and the threat of shame promotes greater contributions to a common good (Jacquet, Hauert, Traulsen, & Milinski, 2011). However, it is not clear that shame actually experienced about a particular wrongdoing promotes positive behavioral change relevant to *that domain*; in other words, that the shame elicited by a DUI license plate in fact reduces an individual's likelihood of future drinking and driving. Furthermore, several researchers have argued that shame is a detrimental response to transgressive behavior, because, rather than promoting positive change, it motivates hiding, escape, and general avoidance of the problem (Tangney, 2002). Supporting this account, those who are prone to shame tend to show a range of dysfunctional dispositions and biological outcomes, including depression, anxiety, eating disorders, chronic anger, heightened cortisol reactivity, and poor immune system functioning (Dickerson, Mycek & Zaldivar, 2008; Gratz, Rosenthal, Tull, Lejuez & Gunderson, 2010; Kilves, Ide, & De Leo, 2011; Tangney, 2002).

Shame typically occurs when individuals blame themselves for negative events, and, in particular, aspects of themselves that are stable, uncontrollable, and not amenable to change (Niedenthal, Tangney & Gavanski, 1994; Tracy & Robins, 2006). Thus, though seemingly counterintuitive, the impact of shame on one's global self-image (i.e., the

feeling, "I'm a bad person") may lead individuals to believe they have no choice but to *be* that person, even if it is someone who hurts others, commits crimes, or engages in substance abuse (Nussbaum, 2006; Tangney, 2002; Tangney, Stuewig, Mashek & Hastings, 2011). As a result, shame may lead to an increase, rather than decrease, of problematic behaviors, making shame a risk factor rather than a deterrent.

Though researchers have suspected that shame promotes self-injurious behaviors, and that dispositional shame is a cause of alcoholism and a barrier to recovery (Dearing, Stuewig & Tangney, 2005), we are aware of no studies that have directly tested these claims. This lack of research may be due the fact that shame is a particularly difficult emotion to assess. Several self-report measures exist, but all require individuals to openly indicate that they feel bad about themselves (Robins, Noftle & Tracy, 2007). The painfulness of experiencing shame combined with its associated behavioral tendencies of hiding and escape (Tangney, Burggraf & Wagner, 1995) typically leads those who are shame-prone to avoid acknowledging those feelings, reducing the ability of any self-report measure to accurately capture shame experiences (Scheff, 1988; Zammuner, 1996). Furthermore, several researchers have argued that shame is often experienced at an implicit level, making it difficult for individuals to consciously report it (Else-Quest, Higgins, Allison, & Morton, 2012; Shaver & Mikulincer, 2005). Thus, in the present research, we assessed shame via both self-report and nonverbal behavioral displays, the latter of which tend to be less under voluntary control.

We tested whether shame about addictive behaviors (i.e., one's most recent alcoholic drink, among self-identified recovering alcoholics) interferes with addicts' recovery by increasing their propensity to engage in the shame-inducing behaviors.

Alcoholics, like all addicts, are known to be dispositionally prone to shame (Dearing, Stuewig, & Tangney, 2005; Meehan, O'Connor, Berry, Weiss, Morrison & Acampora, 1996). Additionally, alcohol consumption may provide a unique means of coping with painful shame feelings, because alcohol induces a form of disrupted cognition in which self-awareness—an essential pre-requisite for the experience of shame (Tracy & Robins, 2004)—is decreased or prevented (Hull, Young & Jouriles, 1986). Thus, some alcoholics may have initially turned to binge drinking as a way to regulate the onslaught of chronic shame. If shame is a risk factor for alcoholism, it may be part of a vicious cycle in which it promotes addictive drinking *and* is experienced in response to addictive drinking, leading to a cycle of abuse. If this is the case, then shame may perpetuate addiction and have a negative impact on health. To address this issue, we assessed health and drinking outcomes in a sample of newly sober recovering alcoholics, and tested whether these individuals' feelings of shame about their past drinking were predictive of their concurrent health and future recovery trajectories.

METHOD

Participants and Procedure

105 individuals (54% women; *M* age=38.7, *SD*=9.6, range=18-75; 76% Caucasian, 14% First Nations, 10% other) who self-identified as newly sober (i.e., within 6 months since last drink, *M*=2.5 months) were recruited from Alcoholics Anonymous (AA) meetings in Vancouver, B.C, to participate in a multi-wave study. AA was targeted for recruitment because AA members tend to be (a) motivated to attain sobriety, (b) likely to experience at least some success in achieving sobriety (e.g. McCrady, Epstein & Kahler,

2004), and (c) accustomed to discussing their drinking-related behaviors, thoughts, and feelings with others within the AA program.

Participants were paid $40 for each of two sessions, during which they completed a series of questionnaires. Sessions were conducted approximately 4 months part (M=4.24, SD=1.81, range=3-11)[1]. This time frame was chosen to capture a window when relapse was likely (most relapses occur within the first three months of sobriety; Foster, Marshall & Peters, 2000; Hunt, Barnett & Branch, 1971). Forty-four percent of participants returned for the second wave of assessment. Though this suggests high attrition, it is not surprising given that many participants lived in halfway houses or other unstable housing situations and were difficult to locate after Wave 1. To test for selective retention, we examined whether participants' scores on any measures of personality, emotions, demographics, or prior alcohol dependence at Wave 1 predicted whether they returned for Wave 2. Of 15 variables examined, only trait negative affect was significantly related to returning for the second wave (r=-.22, p<.05; see Table 1). We additionally used binary logistic regression to test whether all of these predictors together predicted participants' likelihood of returning. The overall model did not reach significance (χ^2_{13}=11.05, p>.50), nor was any individual predictor significantly related to attrition status (all ps>.18), but concordance between model-estimate status and actual status was significant (AUC=.66, p<.05), suggesting that those participants who returned were slightly different from those who did not, largely in reporting slightly lower levels of negative affect. Importantly, there were no differences between participants who did and did not return for Wave 2 on the critical

predictor variables (i.e., behavioral or self-reported shame or guilt). Analyses based on measures collected only at Wave 1 include all participants.

Measures

Nonverbal behavioral displays of shame. At Wave 1, participants were video-recorded while they responded orally to the question, "Describe the last time you drank and felt badly about it." Participants responded to this question while facing an interviewer and a video camera that was placed on a tripod. Five research assistants (blind to hypotheses) were trained to watch videos (without audio) and code the first ten seconds of nonverbal behavior. This brief window of time was chosen both because behavioral coding is a very labor-intensive process (each second of video must be viewed numerous times by each coder to perform ratings for each behavior) and there was a good deal of variance in the length of time participants spoke. Coding the same brief time frame for all participants allowed us to limit the total amount of coding performed and ensured that we captured an equivalent number of behaviors across participants. We chose to use the first 10 seconds of each narrative because we expected that participants would express their strongest emotional reactions immediately upon being asked the prompt question.

Shame displays were coded on the basis of a previously validated shame behavioral coding scheme (Tracy & Matsumoto, 2008), which involves coding for two specific behaviors: chest narrowed (absolute value intra-class correlation=.81) and shoulders slumped (ICC=.76). These behaviors were previously found to correspond to shame or failure across six studies of children and adults from a range of cultures, and to correspond with submission displays documented in non-human animals across a range of species (see

Tracy & Matsumoto, 2008, for a review). These behaviors were combined into a mean shame-display scale (α=.95).[2] All five coders rated all videos.

Self-reported shame. After completing their oral narratives, participants completed the State Shame and Guilt scale (Marschall, Sanftner & Tangney, 1994), a validated self-report measure of momentary shame and guilt experiences (Tangney, 2002). We did not expect guilt to positively predict relapse or health problems; in fact, there are theoretical reasons to expect guilt to be a protective factor against relapse, given that guilt is positively associated with indicators of well-being such as empathy, self-esteem, agreeableness, conscientiousness, and emotional stability (See Tangney & Tracy, 2012 for a review). Furthermore, although few studies have examined the role of guilt in alcoholism separate from shame, in those that have guilt-proneness has emerged as either negatively or not related to alcohol and drug problems (Dearing et al., 2005; Evans, Schill & Monroe, 1978; Meehan et al., 1996; O'Connor, Berry, Inaba, Weiss & Morrison, 1994; Schill & Althoff, 1975). Thus, though we had no clear directional predictions for self-reported guilt, we included it, and report results for analyses treating guilt as a predictor, because doing so allowed us to control for shared variance between guilt and shame, a statistical approach considered essential for examining shame's unique predictive validity on problematic outcomes (Paulhus, Robins, Trzesniewski, & Tracy, 2004; Tangney & Dearing, 2002). This was achieved (as is recommended by Tangney & Dearing, 2002) by regressing the state shame (α=.86) and guilt (α=.82) scales onto each other and in each case saving the standardized residuals, resulting in measures of guilt-free shame and shame-free guilt.

Covariates. At Wave 1 participants completed measures of personality dispositions that might account for relations between shame and subsequent drinking or health outcomes: self-esteem (using the Rosenberg Self-Esteem scale; Rosenberg, 1965; α=.83), trait positive and negative affect (using the Positive and Negative Affect Schedule; Watson, Clark & Tellegen, 1988; α=.87 for PA and α=.91 for NA), and dispositional shame-proneness (using the Test of Self-Conscious Affect-3; Tangney, Wagner & Gramzow, 1989; α=.72). We also assessed participants' alcohol dependence (using the Alcohol Dependance Scale; Skinner & Allen, 1982; α=.90). These variables were treated as covariates in all analyses.

Health outcomes. At both waves participants completed the *Brief Symptom Inventory* (BSI; Derogatis & Melisaratos, 1983), a self-report scale of psychological symptoms with good internal and test-retest reliability (2-week interval). The BSI can be used to measure nine discrete psychiatric diagnoses, but is more reliable as a general measure of psychological distress or psychopathology (Derogatis & Melisaratos, 1983; Piersma, Boes & Reaume, 1994) We used this general measure, by taking the mean of the entire BSI scale, rather than including any subscales separately (α=.97 for Wave 1 and α=.99 for Wave 2).

At both waves participants also completed the *RAND Health Survey* short-form (Vander Zee, Sanderman & Heyink, 1996), a 36-item survey designed to tap subjective evaluations of eight components of physical and mental health. The RAND has high internal and test-retest reliability (2-week interval) and is predictive of the presence of chronic diseases and number of recent medical visits (Brazier, Haper, Jones, O'cathain,

Thomas, et al., 1992; McHorney, Ware & Raczek, 1993). RAND scales are typically coded such that higher scores indicate better health, but we reverse-scored the Rand Total Health score, (α=.86 for Wave 1 and α=.85 for Wave 2), to maintain consistency with the scoring of the BSI.

Drinking Behaviors. At Wave 2 participants reported the number of drinks consumed between waves using the Timeline Follow-Back technique, a daily-estimation method developed for retrospective data collection, shown to effectively assess changes in drinking behaviors (Sobell & Sobell, 1992).

As an additional assessment of relapse between waves, participants were asked, in an open-ended fashion, "How long have you been sober?" We compared the number of months participants reported having been sober at Wave 2 with the number of months between assessments to determine whether relapse occurred between assessments.

RESULTS

All reported analyses control for age, sex, education, alcohol dependence, trait positive and negative affect, trait shame-proneness, self-esteem, and, for longitudinal analyses (except for the survival analysis), length of time between waves. Our analytic strategy was to conduct separate regressions in which these covariates were entered simultaneously with one of our three predictors (self-reported guilt-free shame, self-reported shame-free guilt, and mean shame behaviors), predicting each drinking and health outcome measure. These three predictors were analyzed in separate equations because we were interested in whether shame predicts future health and behavioral problems regardless of how it is assessed (i.e., via self-report or behavioral coding), not whether either

assessment method uniquely predicts outcomes above and beyond the other. Only beta coefficients that are relevant to our main hypotheses are reported here (i.e., for predictors but not covariates), but full regression models including covariate coefficients are available in the supplementary materials online (Table S2, S3). In addition, Table S1 shows intercorrelations among all study variables.

First, to examine the concurrent relation between shame and health, we regressed Wave 1 measures of mental and physical health onto each of our three key predictors. Nonverbal behavioral displays of shame expressed during the first 10 seconds of participants' narratives about their last drink were marginally positively related to poor physical health, β=.17, p=.06 (See Table 2; Table S2). Self-reported guilt-free shame was marginally related to distressing psychiatric symptoms (β=.12, p=.09), but not physical health. Self-reported shame-free guilt was not related to either health measure (ps>.44).

Next, we examined changes in drinking behaviors and health over time. We first employed a Cox regression survival analysis to determine whether shame or guilt predicted the length of time participants maintained sobriety following Wave 1. As predicted, nonverbal displays of shame predicted an increased likelihood of relapsing (at any given time) following Wave 1, log-odds ratio=1.39, SE=.47, p<.01. Neither self-reported state shame nor guilt predicted a significant change in relapse likelihood (See Table 2; Table S2-S3).

We next tested whether shame or guilt predicted the amount of drinks consumed between waves. There was a strong positive skew in the number of drinks consumed, due to many participants abstaining completely between waves and some participants engaging in

binge drinking. The distribution was also over-dispersed (the variance of the number of drinks consumed exceeded the mean). To address these issues, we ran three separate analyses. First, we treated drinking as a binary variable and used binary logistic regression, which ignores the amount of drinking that occurred for each individual. Second, we used a negative binomial regression with a log link function to predict the number of drinks consumed; this analysis assumes the most appropriate distribution for these data. Third, we re-ran the negative binomial regression including only the sub-sample of participants who actually relapsed (i.e., consumed at least one drink between waves). In all three analyses, nonverbal shame displays predicted relapse, regardless of whether it was operationalized as an increased likelihood of any relapse behavior (LOR=2.47, SE=1.20, $p<.05$), or the number of drinks consumed between waves (LOR=2.36, SE=.36, $p<.001$), or the number of drinks consumed between waves for those participants who relapsed only, (n=24; LOR=1.75, SE=.50, $p<.001$; see Table 2; Table S2). This third analysis indicates that the effect of shame on relapse was not driven by a difference between those who relapsed and those who did not. Thus, the extent to which individuals nonverbally displayed shame when discussing their prior drinking not only predicted their tendency to relapse, but also the severity of that relapse.

We next ran OLS regression analyses predicting Wave 2 RAND and BSI scores, including the corresponding Wave 1 scores as additional covariates, so as to assess changes in health. Behavioral displays of shame marginally predicted subsequent declines in physical health, as measured by the RAND (β=.25, p=.08), and significantly predicted an increase in distressing psychiatric symptoms (β=.47, $p<.001$; See Table2; Table S2).

Neither self-reported shame nor self-reported guilt significantly predicted number of drinks consumed or changes in health, (all *p*s>.28; see Table 2, Table S3).

DISCUSSION

When recovering alcoholics publically discuss their past drinking, the degree to which they demonstrate behavioral displays of shame significantly and substantially predicts changes in their physical and mental health, their likelihood of relapsing over time, and the severity of that relapse. Specifically, the more shame behaviors individuals displayed during the first 10 seconds of oral narratives, the more likely they were to relapse and decline in health within the next 4 months. For those who relapsed, shame displays strongly predicted the number of drinks they subsequently consumed.

These findings indicate that responding to past problematic drinking with pronounced behavioral displays of shame is a strong predictor of future drinking, and that shame about one's addiction may be a cause of relapse, chronic drinking, and health declines in recovering alcoholics. While correlational designs limit causal inferences, the present longitudinal data allow for predictive validity, particularly given that shared variance with a large range of likely "third-factor" variables (e.g., prior alcohol dependence, trait affect, relevant demographics) was statistically removed. Although experimental studies are needed to investigate whether interventions (e.g., promoting regulatory strategies to reduce shame) can mitigate the negative impact of shame, the present findings provide the first evidence supporting a long-held assumption among clinicians and treatment providers: that shame is a core emotion underlying addiction. Indeed, given that shame is related to a wide range of difficult-to-control behaviors (e.g.,

drug abuse, overeating, criminality; Dearing et al., 2005; Tangney et al., 2011), the present findings suggest that shame may be more harmful than previously assumed for individuals coping with intransient behavioral problems or addictions, and that shaming punishments against those whose addictions lead them to commit crimes may be quite crippling.

Despite these implications, it is important to note that these findings are based on a relatively small sample, comprised of a unique group of individuals (i.e., recovering alcoholics who have chosen to join AA). We cannot know whether shame has similarly negative effects on behavioral change among individuals who do not fit the profile of AA members or chronic drinkers; this is an important direction for future research. Indeed, given evidence that drinking may inhibit shame feelings, it is possible that the effects observed here apply only to addictive behaviors that can be used to effectively regulate shame. For instance, even among alcoholics, the public shame experienced by being arrested for a DUI might not directly increase drinking and driving (though increased episodes of drinking may mediate such problematic behaviors). Furthermore, although participants were aware that they were speaking aloud to a researcher and being filmed, making their narration a relatively public experience, it did take place in a private setting that is quite different from a large AA meeting or a more public admission of shame or wrongdoing that one might make to friends, family, or the public at large. It is also noteworthy that the present research cannot be taken to indicate the frequency or regularity of shame experiences among recovering alcoholics in response to their last drink, because all participants were prompted to discuss a shame event (i.e., “the last time you drank and felt badly about it”).

One additional limitation is that we did not code for other expressed emotions. While we expected nonverbally expressed shame to show the predicted relation, it is possible that nonverbal displays of sadness or other negative emotions might also be related to drinking outcomes. This is an important consideration for future work, although it should be noted that the present findings for shame displays controlled for self-reported trait positive and negative affect. Furthermore, given that displays of other negative emotions are independent (in terms of the specific behaviors involved) from the shame displays assessed here, future research indicating the relevance of other emotional behaviors to addiction outcomes would not mitigate the implications of the present results.

Indeed, one key implication of these findings is that the measurement of two concrete, observable behaviors displayed during an oral narration of past problem behavior may allow researchers and treatment providers to predict future outcomes. Here, these displays were more effective predictors of future risk than numerous lengthier assessment tools, including measures of state shame and guilt, trait affect, personality, demographic factors, and alcohol dependence (Tables 2, S2). Although our small sample size and reliance on self-report measures of relapse warrants caution in endorsing shame behavioral assessment as a diagnostic tool, the present results call for future research on this issue, ideally with studies that employ larger samples from different populations.

An additional future direction is to examine whether the present effects generalize beyond those actively struggling to overcome a problematic behavioral pattern. That is, does shame predict relapse among alcoholics who have long been sober? More broadly, might feeling shame about losing one's job interfere with the ability to attain a new job, or to perform well at subsequent employment? The present study cannot speak directly to

whether the relation between shame and failure holds for other shame-eliciting behaviors, or for individuals who are struggling with an acute failure.

In conclusion, this research suggests that shame about past addictive behaviors not only fails to help alcoholics avoid these behaviors, but also indicates that they are likely to continue engaging in them.

Endnotes

[1]We sought to bring all participants back after three months, but allowed participants to return even if they contacted us at a later date.

[2]Head-tilt down, often treated as part of the nonverbal shame display, could not be reliably assessed because participants' height affected the orientation of their head to the camera. However, head-tilt down is not essential to the display, and does not reliably occur in response to failure, whereas the broader body movements examined here are more indicative of shame (Tracy & Matsumoto, 2008).

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Table 1.

Descriptive Statistics (Assessed at Wave 1) for Participants Who Returned, and Those Who Did Not, for the Wave 2 Assessment

Variable	Returned for Wave 2 (*n* =46) *M (SD)*	Did not Return for Wave 2 (*n* =59) *M (SD)*	Group Comparison *p*-value
Gender (% women)	61%	56%	.64
Ethnicity (% caucasian)	72%	76%	.61
Education (% with H.S. diploma)	80%	63%	.06†
Age (years)	38(9.5)	38(9.7)	.26
Length of sobriety prior to Wave 1, in months	2.6(1.5)	2.5(1.5)	.57
Trait shame-proneness	2.95(.56)	2.96(.43)	.86
Trait Self-esteem	2.85(1.15)	2.64(1.21)	.38
Trait positive affect	3.47(.70)	3.52(.65)	.72
Trait negative affect	2.56(.90)	2.95(.81)	.03*
Alcohol dependence	1.93(.38)	1.98(.29)	.50
State guilt-free shame	-.019	.015	.77
State shame-free guilt	-.003	.002	.97
Mean nonverbal shame display	.60(.69)	.77(.77)	.28

Note. Self-esteem was assessed with the Rosenberg Self-Esteem Scale, trait Positive and Negative Affect were assessed with the Positive and Negative Affect Schedule, trait shame was assessed with the Test of Self-Conscious Affect -Shame scale, and Alcohol Dependence was assessed with the Alcohol Dependence Scale.

*$p<.05$

†$p<.1$

Table 2. Standardized Beta Coefficients of Shame and Guilt Experienced in Response to Past Drinking, at Wave 1, Predicting Changes in Health Across Waves, Risk of Relapse After Wave 1, Likelihood of Relapse Between Waves, and Drinks Consumed Between Waves.

		RTH	BSI-G	Risk of Relapse	Relapse by Wave 2	Drinks Consumed	Drinks Consumed (relapsers only)
Predictors of Wave 1 outcomes	Self-reported shame-free guilt	-.06	-.06				
	Self-reported guilt-free shame	.07	.12†				
	Mean nonverbal shame display	.17†	.10				
Predictors of Wave 2 outcomes	Self-reported shame-free guilt	.01	.04	-.10	-.16	.18	-.20
	Self-reported Guilt-free shame	.00	-.06	-.13	-.25	-.39	.32
	Mean nonverbal shame display	.25†	.47**	1.39**	2.47*	2.36**	1.75**

Note. Positive correlations signify *worse* health. RTH=RAND-total health survey, BSI-G= Brief Symptoms Inventory total score. Results for the RTH and BSI-G are standardized beta coefficients; all other reported results are unstandardized log odds ratios. Risk of Relapse refers to the relative risk of relapsing at any given point after Wave 1 (based on survival analysis). Relapse by Wave 2 is based on whether participants in fact relapsed between Waves (based on binary logistic regression). For full regression models, see Table S2, S3.

**$p<.01$

*$p<.05$

†=$p<.10$