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Self-Cognitions in Antisocial Alcohol Dependence and Recovery

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Cross-sectional relationships between content and structural properties of the self-concept and alcohol use in young adults with antisocial alcohol dependence (AAD) ($n = 24$), those in recovery from AAD ($n = 18$), and controls ($n = 23$) were examined using the schema model of the self-concept. Persons with AAD had a trend toward fewer positive self-schemas than did controls, and had more negative self-schemas and a trend toward higher interrelatedness than did those in recovery and controls. They also showed evidence of a drinking-related self-schema, whereas those in recovery showed evidence of a recovery-related self-schema. Finally, evidence to support a model using properties of the self-concept to predict high levels of alcohol use was found. These findings provide a beginning empirical foundation for the development of nursing interventions aimed at altering self-structure to prevent the development of and promote recovery from antisocial alcohol dependence.

Keywords: *self-concept; alcoholism subtypes; nursing; schema model; theoretical model*

Despite decades of research, alcohol dependence continues to be a significant public health problem, giving some urgency to the search for

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modifiable risk factors. Disturbances in the underlying structure of the self-concept may be an important modifiable risk factor through which other more distal risk factors exert their influence. Self-concept disturbances have been implicated in the alcoholism clinical literature for decades (Connor, 1962; Drozd & Dalenberg, 1994; Matto, Miller, & Spera, 2005; Quereshi & Soat, 1976; Tarquinio, Fischer, Gauchet, & Perarnaud, 2001; White, 2000), but methodologic problems limit the usefulness of these findings. Because studies have not been based on a theoretical model of the self-concept (Tarquinio et al. is an exception), the properties of the self-concept that are linked with alcohol dependence remain unclear. Studies have tended to treat alcohol dependence as a homogeneous disorder despite considerable research that has shown that the disorder consists of distinct subtypes that differ according to premorbid history, age of onset, and severity of clinical course (see Epstein, Labouvie, McCrady, Jensen, & Hayaki, 2002; Zucker, 2006). In this study, we examined differences in the structural properties of the self-concept in young adults with an early onset type of alcohol dependence called antisocial alcohol dependence (AAD) (Zucker, Ellis, & Fitzgerald, 1994), those in recovery from AAD, and nonalcoholic controls using a contemporary cognitive model of the self-concept called the schema model (Markus, 1977; Markus & Wurf, 1987).

AAD is characterized by an early age of onset, a dense family history of alcohol dependence, history of childhood conduct disorders, antisocial personality traits, and high levels of comorbid psychopathology (Zucker et al., 2000). Although genetic factors have considerable influence in the development of AAD (Zucker, Ellis, et al., 1994), the prevailing view is that the disorder stems from complex interactions between genetic and psychosocial/environmental factors (Heath & Nelson, 2003). Psychosocial and environmental factors can affect the expression of genetic factors, serve as important mediators of genetic risk, and increase risk load in an additive way (Heath & Nelson, 2003). Furthermore, psychosocial/environmental risk factors are more amenable to change than are genetic factors.

Self-Concept Disturbances

One psychosocial factor that has been shown to play a role in alcohol dependence is self-concept disturbances. Despite the methodologic problems in the existing literature noted earlier, there is some suggestion in the alcoholism literature that a poorly developed, unstable, and predominantly negative self-concept may be a core cognitive vulnerability that contributes

to the disorder. According to this view, alcohol is used as a solution to negative affect, including feelings of emptiness, uncertainty, and confusion that stem from a poorly developed self (Arnett, 2005).

There is also some idea that a drinking-related identity—a conception of the self in terms of drinking—may contribute to the progression of alcohol dependence symptoms (Blume & Sheppard, 1967; Brown, 1985; Denzin, 1993; Edwards & Gross, 1976; Matto et al., 2005). From this point of view, the self in relation to alcohol may be conceptualized as a cognitive outcome that develops as a result of repeated enactment of drinking behaviors, and once established in memory, functions to direct and stabilize alcohol-related behaviors. Finally, there is also some preliminary indication that a recovery-related identity—a conception of the self in terms of recovery (Avants & Margolin, 2004; Denzin, 1993; Finfgeld, 1998; Matto et al., 2005; Wing, 1995)—and a more fully developed, stable set of positive self-conceptions (Bennett, 1988; Swora, 2001; Wilke, 2001) may be associated with recovery.

Schema Model of the Self-Concept

According to the schema model, the self-concept comprises a collection of highly elaborated cognitive structures about the self that are referred to as self-schemas (SS), as well as other less fully developed conceptions of the self (Sedikides & Skowronski, 1997). SS have been shown to enhance processing of self-relevant information (Markus, 1977; Stein & Corte, in press) and serve as strong internal regulators of affect and behavior (Estabrooks & Courneya, 1997; Froming, Nasby, & McManus, 1998; Kendzierski & Whitaker, 1997).

Affect and behavior depend in part on the valence of SS. Activation of *positive SS* (e.g., academic, exerciser) generates positive affect and motivates behavior in the domain (Cross & Markus, 1994; Kendzierski, 1990; Froming et al., 1998). Activation of *negative SS* (e.g., negative sexual SS, shy SS, fat SS) generates negative affect and leads to behavioral avoidance and inhibition in the domain (Corte & Stein, 2005; Cyranowski & Andersen, 1998; Emmons, 1996; Wurf, 1988). As such, positive SS may be viewed as cognitive resources, whereas negative SS may be viewed as cognitive liabilities (Stein & Corte, in press).

Affect and behavior are also influenced by the extent to which SS are stored in memory as independent nodes or in highly interrelated neural networks, a property referred to as interrelatedness (Nowak, Vallacher, Tesser, & Borkowski, 2000; Showers, Abramson, & Hogan, 1998; Stein & Corte, in press; Woolfolk, Gara, Allen, & Beaver, 2004; Zajonc, 1960). A network

of highly interrelated SS functions as a unit such that when one gets activated, the activation rapidly spreads to all the SS in the network (Linville, 1985; Mandler, 1982; Showers et al., 1998), and thus, functionally fewer SS are available to guide affect and behavior.

Schema Approach to Antisocial Alcohol Dependence and Recovery

Given the emotional and behavioral consequences associated with individual differences in the valenced content and organization of SS, a person with a self-concept composed of few positive SS and many negative and highly interrelated SS would lack the internal motivation, commitments, behavioral strategies, and positive affect necessary to facilitate meaningful goal-directed behavior. The person is more likely to experience negative affects that trigger maladaptive behavior in an attempt to escape the negative self-views (Baumeister, 1990) and “fill up” the empty self (Cushman, 1990). Adolescents with a genetic predisposition for alcohol problems and exposure to alcoholic role modeling may be likely to turn to alcohol (versus other types of maladaptive behavior) as a means to escape the negative affect. Over time, drinking may lead to the formation of an elaborated conception of the self related to alcohol, that is, a “drinker” SS. Like other schemas, the drinker SS would further contribute to schema-consistent behaviors, in other words, drinking (Stein, Roeser, & Markus, 1998).

Recovery may involve two types of changes in the self-concept: developing a conception of the self related to recovery and building new identities. Envisioning the self in recovery may be an essential first step in the recovery process. From this perspective, formation of a “recovering alcoholic” SS may be viewed as a cognitive underpinning of behavioral change (Stein & Markus, 1994) that serves to motivate schema-consistent (recovery) behaviors. New identities are also likely to form during the recovery process as meaningful goals are developed, healthy relationships are formed, and involvements increase. The development of new positive identities would result in a relative decrease in the number of negative SS and the level of interrelatedness.

Research Design

A cross-sectional between-groups design was used to examine the valence, content, and organization of SS in persons with AAD, those in

recovery, and controls, and to test a model in which these self-concept properties predict the level of alcohol use. Four hypotheses were tested:

Hypothesis 1: Persons with AAD will have self-concepts characterized by fewer positive SS, more negative SS, and higher interrelatedness than those in recovery and controls.

Hypothesis 2: Persons with AAD will differ from the other groups in the availability of a drinker SS.

Hypothesis 3: Persons in recovery will differ from the other groups in the availability of a recovering alcoholic SS.

Hypothesis 4: The number of positive SS and negative SS and interrelatedness will predict negative affect, which in turn will predict the level of alcohol use, and this effect will be mediated by the drinker SS.

Method

Participants

The sample consisted of three groups of young adults between 21 and 31 years of age: those with AAD ($n = 24$), those in recovery from AAD, that is, self-reported abstinence from alcohol and other substances for at least 1 year ($n = 18$), and nonalcoholic controls who had a negative lifetime history of alcohol or other substance use disorder ($n = 23$). Sample size was sufficient to test hypotheses based on effect size estimates derived from a study using similar measures of the self-concept in a clinical sample (Stein & Corte, in press). Participants for the AAD group were recruited from inpatient alcohol treatment centers. Those in the recovery group were recruited using announcements at open meetings of Alcoholics Anonymous (AA), flyers at alcohol recovery centers, and referrals from other participants. Controls were recruited using community-based advertisements and referrals from other participants. These recruitment strategies are consistent with those of other studies using comparison groups for participants from alcohol treatment centers (e.g., De Bellis et al., 2005; King, Bernardy, & Hauner, 2003).

The structured clinical interview for *DSM-IV* Axis I disorders (First, Spitzer, Gibbon, & Williams, 1997) was used to establish the presence or absence of current/lifetime alcohol dependence. Twenty percent of the audiotaped interviews were coded independently. Interrater reliability for the alcohol dependence diagnosis was high ($\kappa = .88$).

A cutoff of > 24 on the Antisocial Behavior Checklist (Zucker & Fitzgerald, 1996), a 45-item measure of aggressive and antisocial activities

in adolescence and adulthood, was used to distinguish the antisocial subtype of alcohol dependence. A score of 24 correlates highly with antisocial personality disorder (Zucker, 1999). Adequate test-retest reliability and discriminant validity has been shown (Zucker, Noll, Ham, Fitzgerald, & Sullivan, 1994). Cronbach's $\alpha = .92$.

To control for major depressive disorder (MDD), which is highly comorbid with alcohol dependence (Grant & Harford, 1995; Li, Hewitt, & Grant, 2004), the 21-item depression subscale of the Psychiatric Diagnostic Screening Questionnaire (Zimmerman & Mattia, 1999) was used. Nine or more yes responses indicate a current *DSM-IV* MDD. Validity and reliability in psychiatric outpatients has been shown (Zimmerman & Mattia, 1999). Cronbach's $\alpha = .94$.

The sample was primarily Caucasian (93.8%) young adults (25.7 ± 2.9 years). The AAD group had more men (83.0%) than recovery (44.4%) or controls (43.5%), $\chi^2 = 9.70, p < .01$, and fewer persons in the AAD group had college experience (50.0%) compared with those in recovery (88.9%) or controls (95.7%), $\chi^2 = 15.8, p < .001$. Therefore, gender and education were used as covariates in all analyses. MDD was more prevalent in the AAD group (83.3%) than recovery (5.6%) or controls (8.7%), $\chi^2 = 38.3, p < .001$. The AAD group and recovery groups did not differ in degree of antisociality (40.5 vs. 37.5, $t < 1$) or duration of alcohol dependence (8.0 years vs. 7.6 years, $t < 1$). Persons in recovery were abstinent for 40.9 ± 30.0 months.

Measures

Number of valenced SS. A card-sorting task was used to measure the number of valenced SS and interrelatedness. Participants were given a stack of 52 blank index cards and asked to write one self-defining attribute on as many cards as necessary to thoroughly describe themselves. They then made self-descriptiveness, importance, and valence (positive, negative, neutral) ratings for each self-descriptor. Based on Markus' (1977) work on schematicity, descriptors rated as both highly self-descriptive (8 to 11 on an 11-point scale) and very important to one's self-definition (8 to 11 on an 11-point scale) were identified as SS. The number of positive (negative, neutral) SS was computed by totaling the number of positive (negative, neutral) self-descriptors that met the criteria for a schema. Using self-descriptiveness and importance ratings to identify SS predicts anticipated differences in information processing (Markus, 1977; Markus, Hammill, & Sentis, 1987; Stein & Corte, in press) and behavior (Kendzierski, 1988,

1990; Kendzierski & Whitaker, 1997) between schematics (those with a schema in a given domain) and aschematics (those without a schema in a given domain), demonstrating construct validity. Test-retest reliability over 18 months for the number of SS has been shown, $r(34) = .49, p < .01$ (Stein, 1995).

Interrelatedness. Degree of interrelatedness was determined by asking participants to identify subjective dependencies among their self-descriptors. Participants were asked to focus on one self-descriptor at a time and list “all the characteristics that would change if that [targeted] characteristic was changed, absent, or untrue of you.” A resulting dependency matrix was standardized to control for varying numbers of self-descriptors. Scores range between 0 and 1 with higher values indicating higher interrelatedness. A predicted negative correlation between interrelatedness and Linville’s (1985) self-complexity score demonstrates criterion validity. Test-retest reliability over 18 months is adequate, $r(34) = .34, p < .05$ (Stein, 1995).

Availability of drinker and recovering alcoholic SS. Drinker and recovering alcoholic SS were measured with two 4-item 11-point Likert-type scales. The original scales measured smoker and abstainer SS (Shadel, Mermelstein, & Borrelli, 1996) and were modified to focus on views of the self as a drinker and a recovering alcoholic. Each item asked participants to rate the extent to which they agreed or disagreed with items designed to assess the personal significance of being a drinker (e.g., “drinking is part of who I am”) and recovering alcoholic (e.g., “I think of myself as a recovering alcoholic”). Scores were summed with high scores reflecting the extent to which being a drinker (or recovering alcoholic) was personally meaningful. Cronbach’s alpha for the drinker and recovering alcoholic SS scales were .93 and .95, respectively.

Negative affect. The negative affect subscale of the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) was used to measure negative affect in the last month. Respondents were asked to consider the frequency with which they have been experiencing each of 10 negative moods over the past month (1 = *very slightly or not at all*, 5 = *extremely*). Scores were summed across the 10 items. Evidence of convergent and discriminant validity and test-retest reliability has been shown (Watson et al., 1988). Cronbach’s alpha = .93.

Current level of alcohol use. Two questions were used to compute the number of standard drinks in the last month: (a) number of drinking days in

last month and (b) number of standard drinks consumed per day when drinking in the last month. Self-report is commonly used to measure alcohol use in both acute care and primary care settings (Del Boca & Darkes, 2003; Sommers et al., 2000). Self-reported alcohol use has been shown to be more sensitive than biochemical indicators of heavy drinking (Babor, Steinberg, Anton, & Del Boca, 2000; Del Boca & Darkes, 2003) and highly concordant with alternative sources, for example, collateral informant reports (Babor et al., 2000; Chermack, Singer, & Beresford, 1998; Laforge, Borsari, & Baer, 2005), even if participants believe that their self-reports will be verified by other means (Aguinis, Peirce, & Quigley, 1995). Self-reported alcohol use has also been shown to be reliable over 2 months (Adair, Craddock, Miller, & Turner, 1996) and 12 weeks (Cohen & Vinson, 1995).

Procedures

Individuals recruited from inpatient alcohol treatment centers were approached by the first author within 1 week of admission (and after detoxification). All others were provided a description of the study by telephone. Potential participants were informed that "the purpose of the study is to examine the relationship between patterns of thinking, particularly thoughts and attitudes about oneself, and behavior." Data were collected in two sessions approximately 1 week apart. Participants received a \$15 gift certificate after each session.

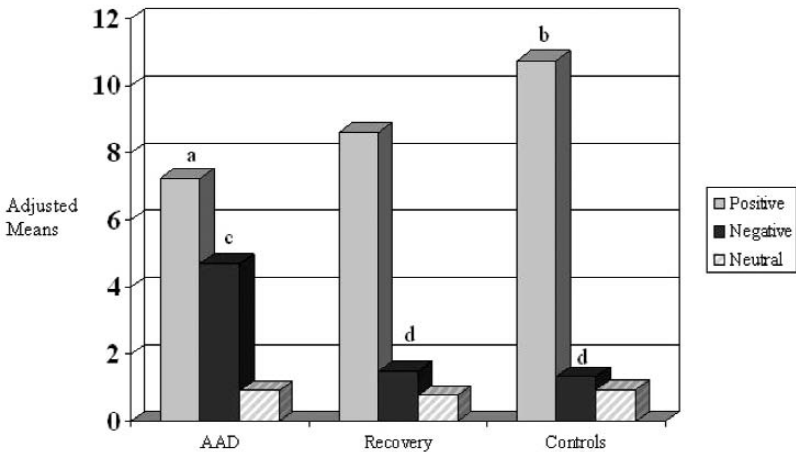
Results

Data from one female participant in the recovery group was removed from all analyses because she was 5.5 standard deviations above the mean on the number of negative SS ($n = 33$).

Group Differences in Structural Indicators of the Self-Concept

Number of valenced SS. A between-groups repeated measures ANOVA on the number of SS classified by subjectively rated valence (positive, negative, or neutral) for the three groups (AAD, recovery, control) was completed. Gender and level of education were included as covariates because of group differences in these variables. A significant main effect for

Figure 1
Number of Valenced Self-Schemas by Group, Controlling for Differences in Gender and Level of Education



Note. Superscripts reflect between-groups differences.
 a < b, $p = .088$
 c > d, $p < .01$

valence, $F(2, 58) = 58.00, p = .005$, and a significant diagnostic group \times valence interaction, $F(4, 116) = 4.00, p = .001$, were found. The main effect for valence indicated that participants generated more positive SS compared with negative or neutral SS. Figure 1 shows planned comparisons to examine the group \times valence interaction. The AAD group had marginally significantly fewer positive SS compared with controls, $t = 1.73, p = .088$, and more negative SS compared with those in recovery, $t = 2.80, p = .007$, and controls, $t = 3.03, p = .004$. Contrary to predictions, the number of positive SS was not significantly higher in the recovery group compared with the AAD group, $t < 1$; the number of positive SS was approximately halfway between that of the AAD group and controls. No differences in neutral SS were found, $ts < 1$.

Interrelatedness. An ANCOVA (with gender and education as covariates) was used to test the hypothesis that the AAD group would have higher interrelatedness than the other two groups. Despite a pattern of means in the predicted direction, adjusted means showed that interrelatedness among the SS was not significantly higher in the AAD group (adj. $M = 0.24$) compared with those in recovery (adj. $M = 0.21$) and controls (adj. $M = 0.20$), $F(2, 59) < 1, p = .60$.

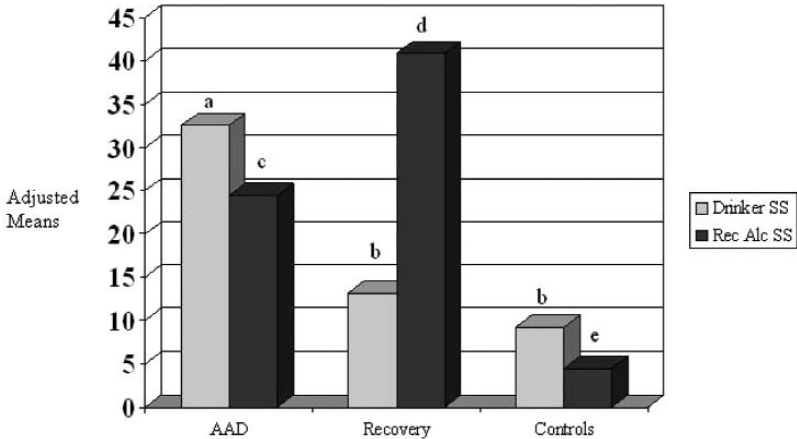
Group Differences in Availability of Drinker and Recovering Alcoholic SS

Between-groups repeated measures ANCOVAs on the drinker and recovering alcoholic SS for the three groups (AAD, recovery, control) were completed to test Hypotheses 2 and 3 that persons in the AAD group would have higher drinker SS scores than the other two groups, and persons in the recovery group would have higher recovering alcoholic SS scores compared with the other two groups (with gender and education as covariates). Results revealed predicted group differences in the drinker and recovering alcoholic SS scores, $F(2, 59) = 39.00, p < .001$. Planned comparisons (Figure 2) showed that the AAD group had higher drinker SS scores compared with those in recovery, $t = 5.41, p < .001$, and controls, $t = 6.69, p < .001$, and the recovery group had higher recovering alcoholic SS scores compared with those in the AAD group, $t = 5.72, p < .001$, and controls, $t = 13.87, p < .001$. Unexpectedly, the AAD group also had higher recovering alcoholic SS scores compared with controls, $t = 7.14, p < .001$.

Structural Indicators of the Self-Concept as Predictors of Alcohol Use

A series of regression analyses were completed (with the entire sample) to test the fourth hypothesis that the self-structure variables predict the level of alcohol use, and that this effect is mediated by negative affect and the drinker SS. In the first analysis, the number of positive SS, number of negative SS, and interrelatedness were used to predict negative affect. In the second analysis, the three self-structure variables and negative affect were used to predict the drinker SS score. In the third analysis, the three self-structure variables, negative affect, and the drinker SS score were used to predict the number of alcohol drinks in the last month. To determine

Figure 2
Drinker and Recovering Alcoholic
Self-Schema (SS) Scores by Group, Controlling for
Differences in Gender and Level of Education



Note: Superscripts between group differences.

a > b, $p < .001$.

c < d, $p < .001$.

c > e, $p < .001$.

whether the effects of the self-structure variables on alcohol use were the same for those who were and were not currently alcohol dependent, we first did the analyses including current alcohol dependence (0 = no, 1 = yes) and two-way interactions between alcohol dependence and the self-structure variables (positive SS, negative SS, and interrelatedness) as predictors. Because no interactions were found (indicating that the effect of self-structure on alcohol use was the same regardless of alcohol dependence), we removed alcohol dependence from the model. Bivariate correlations for all variables in the path analysis are shown in Table 1.

Results for each step of the path analysis are shown in Table 2 with a path diagram shown in Figure 3. The model was significant, $F(5, 58) = 13.0, p < .001, R^2 = .53$, with the three self-structure variables predicting negative affect, which in turn predicted the drinker SS score, which in turn

Table 1
Bivariate Correlations Among all Predictor and Dependent
Variables for Entire Sample (N = 64)

	1	2	3	4	5	6	7	8	9	10
1 Positive SS	—	.21	-.10	-.29	-.13	.28	-.34	-.40	-.29	-.14
2 Negative SS		—	.02	.34	.11	-.11	.35	.40	.33	.35
3 Interrelated			—	.22	-.22	-.15	.27	.38	.15	-.05
4 Alcohol Dep.				—	-.38	-.49	.77	.69	.68	.65
5 Gender					—	.31	-.16	-.23	-.19	-.20
6 Education						—	-.28	.33	-.23	-.23
7 MDD							—	.76	.62	.63
8 Neg. affect								—	.64	.53
9 Drinker SS									—	.68
10 #Drinks/mo.										—

Note: SS = self-schema; Alcohol Dep. = current alcohol dependence (0 = no, 1 = yes); Gender (0 = male, 1 = female); Education (0 = no college, 1 = some college); MDD = major depressive disorder (0 = no current MDD, 1 = current MDD).

predicted the number of alcohol drinks per month. Negative affect also directly contributed to the number of alcohol drinks per month. The only unexpected finding was a direct negative path from interrelatedness to alcohol use. Further investigation of the unexpected direction of this path revealed a classic suppressor relationship (Maassen & Bakker, 2001) between interrelatedness, negative affect, and the number of alcohol drinks per month. This means that the part of negative affect that is related to interrelatedness is distinct from the part of negative affect that is related to alcohol use; it does not mean that high interrelatedness contributes to lower levels of alcohol use.

Next, because of gender and education differences in our sample, we ran a model including dummy variables for gender (0 = male, 1 = female) and education (0 = no college, 1 = some college) as predictors in the first step along with the self-structure variables, but neither gender ($\beta = .15, p = .12$) nor education ($\beta = -.06, p = .57$) was significant. We also ran a model using a dummy variable for current MDD (0 = no, 1 = yes) as a predictor in the first step along with the self-structure variables. Although MDD positively predicted negative affect ($\beta = .52, p < .001$), the drinker SS ($\beta = .29, p = .06$), and the level of alcohol use ($\beta = .41, p = .004$), the self-structure variables also remained significant, $F(6, 57) = 13.9, p < .001, R^2 = .59$.

Table 2
Path Analysis Using Self-Structure to Predict the Number
of Alcohol Drinks in the Past Month (N = 64)

Variable	B	SE	β
Step 1. Negative affect			
# Positive SS	-.89	.18	-.47***
# Negative SS	1.6	.31	.48*
Interrelatedness	37.7	9.1	.33***
$R^2 = .51, F(3, 60) = 20.9,$ $p < .001$			
Step 2. Drinker SS			
# Positive SS	-.17	.27	-.07
# Negative SS	.41	.48	.10
Interrelatedness	-10.9	13.0	-.09
Negative affect	.72	.17	.61***
$R^2 = .43, F(4, 59) = 11.2,$ $p < .001$			
Step 3. Number of alcohol drinks/month			
# Positive SS	2.9	3.2	.10
# Negative SS	2.1	5.7	.04
Interrelatedness	-352.3	154.3	-.23*
Negative affect	4.4	2.3	.29*
Drinker SS	6.9	1.5	.54***
$R^2 = .53, F(5, 58) = 13.0,$ $p < .001$			

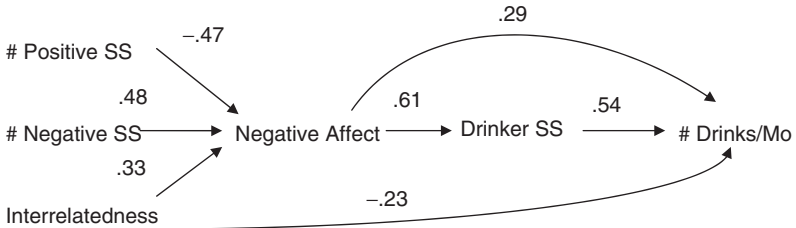
Note: Steps 1 through 3 are dependent variables. Predictor variables are indented.
 *** $p < .001$. * $p \leq .05$.

Discussion

The schema model of the self-concept was used to examine differences in content and structural properties of the self-concept in young adults with AAD, those in recovery from AAD, and controls, and to determine whether these properties of the self-concept predict the current level of alcohol use. Overall, results suggest that characteristics of the total array of SS that comprise the self-concept are differentially associated with AAD and recovery.

We found partial support for the assertion that persons with AAD have self-concept configurations characterized by few positive and many negative SS and high interrelatedness. Results are consistent with the theoretical

Figure 3
Self-Structure to Predict the Number of Alcohol
Drinks in the Last Month ($N = 64$)



$$R^2 = .53, F(5,58) = 13.0, p < .001$$

Standardized beta weights for significant paths ($p < .05$) only are shown.

prediction that a person with few positive SS, many negative SS, and high interrelatedness would both lack the positive framework to guide behavior and be more likely to experience negative affect states that trigger maladaptive alcohol use. In addition, these self-concept properties predicted negative affect and high levels of alcohol use.

Persons with AAD also showed evidence of a drinking-related SS available in memory. In the predictive model, the drinker SS mediated the effects of negative affect on the level of alcohol use. Although limited by these cross-sectional data, the alcohol-related self-conception may have formed because of repeated drinking-related behavioral incidents and alcohol assuming a progressively central role in the person's life given what we know about SS formation (Klein, Sherman, & Loftus, 1996; Stein et al., 1998). Once formed, like other schemas, this drinking-related self-conception would facilitate behavior in the domain, that is, alcohol use. Continued drinking would then serve to make the developing alcohol-related SS an even more elaborated, stable, and highly accessible structure (Bargh, Lombardi, & Higgins, 1988) that further motivates alcohol use. Because participants had been alcohol dependent for years, the drinker SS may have already been a stable and elaborated structure that served to mediate the effects of negative affect on alcohol use.

The hypothesis that the self-concepts of those in recovery would be characterized by many positive SS, few negative SS, and low interrelatedness was partially supported. The number of negative SS and degree of interrelatedness were nearly identical to the control group, but the number of positive SS was not as high as expected. It is difficult to draw conclusions about differences in self-concept configurations for the AAD and recovery groups with cross-sectional data. One plausible explanation for the observed differences is that negative SS are a product of the disorder and hence are newer cognitions. Because newer cognitions are more vulnerable to decay (Zola-Morgan & Squire, 1993), there may be a decrease in the number of negative SS and the overall level of interrelatedness in recovery (Niedenthal & Beike, 1997).

Recovery was also associated with a well-defined view of the self as a recovering alcoholic. The recovery SS may have formed as a result of repeated recovery-related behavioral incidents, for example, identifying oneself as an alcoholic at AA meetings and involvement with recovery-related activities and people. Continued involvement in recovery would serve to make the developing recovering alcoholic SS an even more well-elaborated, stable, and highly accessible structure (Bargh et al., 1988), which would serve to motivate recovery behaviors.

The fact that the AAD group also showed evidence of a recovery-related SS was unexpected, but higher scores in the recovery group than in the AAD group (41 vs. 24) suggests that the recovery-related SS was less well elaborated in the AAD group. One plausible explanation is that the majority of persons in the AAD group were in alcohol treatment programs based on the AA recovery model; their participation at meetings may have fostered the early development of a conception of the self as a recovering alcoholic. Another possible explanation is that these participants may have been in treatment *because* they already had an emerging recovery-related self-cognition; their openness to recovery might have distinguished them from persons with AAD who do not seek treatment. Participants in treatment may also have been motivated by social desirability to endorse that being a recovering alcoholic was important to how they thought about themselves. Given that persons with antisocial personality traits characteristically disregard social norms (American Psychiatric Association, 2000), however, the latter hypothesis is unlikely. Efforts to target persons with AAD who are not in treatment settings, for example, in jails or hospitals, and studies to examine the evolution of the recovery SS over time of persons who are in treatment may clarify these issues.

The stability in the predictive model(s) while controlling for current MDD and group differences in gender and education suggests that the structural properties of the self-concept play an important role in the affect, cognitions, and behaviors associated with AAD. Given that the findings held despite relatively low power given the number of parameters in the path model, they are not likely to be spurious.

The fact that persons in the AAD group had less formal education compared with the other two groups was not surprising because current heavy drinking may interfere with educational pursuits. Another possibility, of course, is that persons in recovery may inherently have more resources and strengths that enable them to be more successful in general, for example, in educational pursuits and in the recovery process. Although education was not a significant predictor in the path analysis, null findings in the presence of a relatively small sample (considering the number of parameters in the path model) have to be interpreted with caution.

Gender differences between the AAD and recovery groups may have had to do with sampling. Potential participants for the AAD group were approached face-to-face at the treatment center by the investigator. Persons in recovery and controls were recruited primarily through advertisements and announcements at AA meetings. Many of the men in the recovery and control groups were recruited via snowball sampling. The gender differences in our sample may reflect the fact that women are more likely to spontaneously volunteer to participate in studies (Senn & Desmarais, 2001). Once again, although gender was not a significant predictor in the model, null findings in the presence of a small sample have to be interpreted with caution.

Limitations

Findings may not generalize to persons with AAD who are not in treatment, persons in recovery who do not participate in AA, and those who are younger than 21 or older than 31. These cross-sectional data limit our ability to determine whether self-concept disturbances found in AAD were a contributor to or a consequence of the disorder. Resolving this issue is critical because the implications of the self-concept as a cognitive vulnerability to the disorder would be quite different from the implications of targeting the self-concept in recovery. A longitudinal study is needed to more clearly establish causal relationships between the self-concept and AAD.

Conclusions and Implications

This study provides the first empirical evidence that specific deviations in the self-concept are associated with AAD and that persons in recovery from AAD have a more well-developed self-concept that includes a recovering alcoholic SS. These findings offer promising new directions for research. Clarifying the causal direction of self-concept disturbances and maladaptive alcohol use and identifying factors related to the development and elaboration of the drinking-related and recovery-related SS will provide a strong empirical foundation for the development of nursing interventions aimed at altering self-structure to prevent the development of and promote recovery from AAD.

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