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An Exploratory Analysis of Changes in Self-Regulation and Social Support Among Men and Women in Recovery

Joseph R. Ferrari, Edward B. Stevens, and Leonard A. Jason
DePaul University

Abstract

The present study examined the association between changes in self-regulation and measures of general and specific social support that occurred across an 8 month interval among adults ($n = 469$: 317 men, 152 women; M age = 39.0 years) with histories of substance abuse. Participants resided in communal living, democratically governed, abstinent homes ($n = 143$) located across the United States. Participants' self-regulation scores, on average, increased over the 8 month period and the self-regulation change scores were significantly related to general social support. In addition, self-regulation score changes were associated with the participant's social network's support for drinking where greater support for drinking was accompanied by larger self-regulation increases. These findings augment research on multi-factor support theories and changes in self-regulation.

Keywords

Self-regulation; social support; recovery homes; Oxford House

The Relationship of Self-Control and Social Support

Previous research on self-regulation has suggested that individuals possessing greater self-regulatory resources behave in a more beneficial manner and are more likely to achieve better lifestyle outcomes. These studies have examined the relationship between self-regulation and cognitive tasks (Tangney, Baumeister & Boone, 2004; Muraven, Tice & Baumeister, 1998) and found positive relationships between self-regulation, academic performance and had other mental tasks. With respect to impulsive behaviors, self-regulation resources have been correlated with impulsive buying behavior (Vohs & Faber, 2007), eating fattening snacks (Tice, Bratslavsky & Baumeister, 2001, resistance to drinking alcohol (Ferrari, Stevens & Jason, 2007; Muraven & Shmueli, 2006), and capacity to control aggression (DeWall, Baumeister, Stillman & Gailliot, 2007). In addition, self reports of greater self-control have been associated with fewer reports of psychological difficulties and better overall adjustment (Tangney, et al., 2004). Overall, these research efforts have documented a significant relationship between an individual's self-regulation resources and positive outcomes.

While the association between self-regulation and performance from cognitive, emotional and behavioral perspectives has been significantly established, an important characteristic of self-regulation has been self-regulation's nature as a finite resource. Much of the research on self-regulation has focused on how subjects perform before and after a stressing of self-regulation resources (Tice, et al., 2001; DeWall, et al. 2007.) Muraven and Baumeister

(2000) have described this diminution effect as comparable to *muscle fatigue* meaning self-control strength can be exhausted or depleted. The utilization of self-regulation resources has been tested across a variety of domains considered central to an individual's social well-being. These studies include intellectual performance (Schmeichel, Vohs, & Baumeister, 2003), decision making (Ferrari & Pychyl, 2007), impression management (Vohs, Baumeister & Ciarocco, 2005), and social exclusion (Baumeister, DeWall, Ciarocco, & Twenge 2005). Together, these studies have documented the reduction in or usage of self-regulatory resources when an individual was confronted by a challenging situation.

Thus the development of the depletion or limited strength model has argued that self-control utilizes self-regulation resources that require replenishment for a desired behavior to persist or for a performance level to be maintained (Muraven & Baumeister, 2000). Research on impulsive behaviors or resistance to temptations (Vohs & Faber, 2007; Muraven, et al., 2002) and the role of impulsivity in substance abuse (Jason, Olson, Ferrari, Majer, Alvarez & Stout, 2007; Dom, Wilde, Hustijn & Sabbe, 2007; Dawe, Gullo & Loxton, 2004; Ferrari, et al., 2007) have supported an association of self-regulation's linkage to impulsivity restraint and maintaining desired behaviors. Replenishing or building self-regulation strength has been examined with the equivalent of exercise (Galliot, Plant, Butz & Baumeister, 2007) and social inclusion (Twenge, Catanese & Baumeister, 2002). Little longitudinal research has explored the direct association between social support and changes in self-regulation, although significant research has linked social support with both physical and mental health (Cohen, Gottlieb & Underwood, 2001).

Previous research has explored the relationship between self regulation and how long participants had been abstinent (Ferrari, et al., 2007). This analysis included a factor analysis which resulted in two factors, *impulse control*, the perceived ability to resist temptation (four questions, $\alpha = 0.69$), and *general self-discipline*, the perceived ability to achieve goals (9 questions, $\alpha = 0.80$). The *impulse control* score was the best predictor of time abstinent. This linkage of impulsivity and substance abuse behaviors has been suggested by previous studies (Patock-Peckham & Morgan-Lopez, 2006; Dom, et al. 2007) where impulsivity measures are correlated with substance abuse behaviors. The present study explored the relationship of changes in self-regulation and the two component factors with social support.

Most broadly defined, social support is a resource derived from others (Cohen, Underwood & Gottlieb, 2000). Within this overall context, numerous distinctions and dimensions can be formulated. Haber, Cohen, Lucas and Baltes (2007) recently reviewed the literature and reported that perceived and actual social support effects were similar across varied populations. For adults in recovery from substance abuse, the relevant literature on social support has focused on the relationships between general social support (Beattie, Longabaugh, Elliott, Stout, Fava & Noel, 1993), alcohol specific social support (Beattie & Longabaugh, 1999), network composition (Groh, Jason, Davis, Olson & Ferrari, 2007), and the likelihood of relapse. Generally, these studies have suggested social support has a relationship with substance abuse behavior and that these relationships may be either positive (e.g. support for abstinence) or negative (e.g. support for drinking).

In the present study, it was hypothesized that changes in self-regulation would be significantly related to social support. In addition, because Jason et al. (2007) found that self-regulatory resources increased over time as length of abstinence increased (also Ferrari, et al., 2007), it was predicted that impulse control and general self-discipline would similarly increase over time. This paper examined whether changes in self-regulation were predicted by levels of social support.

Method

Participants

A total of 469 adult residents (317 men, 152 women; $Mage = 39.0$ years old, $SD = 9.4$) living in one of 143 communal living settings across the U.S. called *Oxford Houses* served as participants in the present study. At present, over 1,200 *Oxford Houses* operate on a national basis (see Jason, et al., 2006, for details). Each *Oxford House* is a communal residence that is a rented, single-family house for people recovering from substance abuse (see Ferrari, Jason, Sasser, Davis & Olson, 2006). The houses are resident-funded, democratically governed, without restrictions on length of stay, and operate with minimal rules other than economic sufficiency and a zero tolerance for substance usage (Ferrari, Jason, Davis, Olson & Alvarez, 2004). These individuals completed survey information on self-regulation eight months apart within a larger, one year longitudinal study on recovery (Jason, Davis, Ferrari, & Anderson, 2007).

Most participants were Caucasian (59.3%) or African American (32.2%), single (52.9%) or divorced (28.4%). They averaged 12.6 years of education ($SD = 2.0$) and had been in residence at an Oxford House for 12.0 months ($SD = 15.7$). The length of time since last alcohol use averaged 2.0 years ($SD = 3.0$) and for drug use, it was 2.1 years ($SD = 3.2$).

Procedure

Participants were recruited by advertisement in an Oxford House newsletter mailed in 2001 to each house across the U.S. and by telephone inquiry to Oxford House Presidents in five targeted geographical areas that had the highest concentration of Oxford Houses (Washington/Oregon, Pennsylvania/New Jersey, North Carolina, Illinois and Texas. All participants were informed about the purpose, objectives and methodology of the study. A consent form was obtained from each participant that detailed the voluntary nature and potential risks of the study. Each participant then completed the self-report measures of self-regulation, an important person inventory, and instruments on demographics and addiction history. Upon completion of the surveys, each participant was paid \$15. See Jason et al. (2006) for details.

Psychometric Measures

All participants completed the *Addiction Severity Index-Lite* (ASI; McLellan, et al., 1992), which assessed common difficulties associated with substance abuse (e.g. drug use, alcohol use, and illegal activity). This instrument has been used and researched extensively over the last 15 years. It has demonstrated good test-retest reliability ($r = 0.83$; McLellan et al., 1992). Makela (2004) found very good internal consistency for medical status, alcohol use and psychiatric status. Utilizing only sub-sections of the scale has been deemed appropriate and psychometrically sound by McLellan, et al. (1992) and the *ASI* was used successfully in previous outcome studies with Oxford House residents (e.g. Jason, Davis et al., 2007; Jason, Olson et al., 2006). For the present study, socio-demographic data from the ASI were utilized.

Participants completed the *Alcohol & Substance Abuse—Form 90 Timeline Followback* (Miller, et al., 1994), which gathers information regarding general health care utilization, residential history, and alcohol and drug usage over the prior 90 days. Research on the reliability of this instrument has found it to be good-to-excellent for all summary measures of alcohol consumption and of illicit drug usage for drugs that were most frequently used; *retest r* = 0.90 for both alcohol usage and drug usage (Tonigan, Miller, & Brown, 1997). This instrument was used previously in other Oxford House studies (Jason, Davis et al., 2007).

Self-regulation was assessed by having participants complete the *Self-Regulation Scale* (Tangney, Baumeister, & Boone, 2004) which consists of 13 items scored on a 5-point Likert scale (1=*not at all*, 5=*very much*). Examples of questions include *I do certain things that are bad for me, if they are fun* and *I am able to work effectively toward long-term goals*. According to Tangney et al. (2004) this measure had good internal consistency ($\alpha = 0.83$ to 0.85), and within the present sample, Cronbach's α was 0.82 ($M = 44.3$; $SD = 8.2$). Previous research (Ferrari, Stevens & Jason, 2007) performing an exploratory factor analysis on this measure found two internally consistent components. One factor, called *general self-discipline*, consisted of 9 questions ($\alpha = 0.80$, $M = 31.1$, $SD = 6.25$, current sample) that assessed the ability to formulate and achieve goals. The second factor, called *impulse control*, included 4 questions ($\alpha = 0.69$ ($M = 12.9$, $SD = 3.27$) that examined the ability to resist temptation.

Social support information was collected by administering the *Important People Inventory* (IP; Clifford & Longabaugh, 1991; Clifford et al., 1992). This version was adapted from the instrument developed for Project MATCH (Clifford & Longabaugh, 1991). The inventory contained contact and behavior information on up to 12 people in the participant's social network (e.g. spouse, parent, sibling, friend, etc.). In addition, the participant may choose up to 4 people to include in a *Most Important People* (MIP) section.

Measuring the components and levels of social support has been a somewhat complex exercise (see Groh, Olson, Jason, Ferrari & Davis, 2007; Zywiak, Longabaugh & Wirtz, 2002). Both Groh et al. (2007) and Zywiak et al. (2002) have suggested reformulations of the *Important People Inventory* to increase the simplicity of the instrument and its effectiveness. In its initial form, the IP consists of a summary score of 11 indices. These 11 indices also form two subscales, *Support for Drinking* and *Investment in the Identified Network* (Longabaugh, et al., 1998). The instrument was designed to measure support for drinking, although some previous studies have used it to measure support for abstinence (Majer, et al., 2002; Beattie & Longabaugh, 1999). The *Brief Important People Interview* developed by Zywiak et al. (2002) utilizes 3 of the 11 indices and consists of two subscales (Index 5—network members' drinking frequency and the product of Index 2 and Index 8—amount of contact times proportion of network abstaining or recovering). In contrast, a 3 factor model derived by Groh et al. (2007) comprises 3 factors that consist of 3 indices each. The factors are *General Social Support* (for drinking), *Support for Drinking from Network Members* and *Drinking Behaviors of Network Members*. In their analysis of alcohol abuse behaviors with a sample of adults in substance abuse recovery, *Drinking Behaviors of Network Members* was significantly predictive. These results were consistent with those found by Zywiak et al. (2002).

The present study utilized a three subscale version of the IP developed by Groh, Olsen, Jason, Ferrari, and Davis (2007). These subscales were derived using exploratory factor analysis and were described as *General Social Support* (3 items), *Support for Drinking from Network Members* (3 items), and *Drinking Behaviors of Network Members* (3 items). Internal reliability was good for *Support for Drinking* ($\alpha = 0.81$) and *Drinking Behaviors* ($\alpha = 0.75$) yet weak for *General Social Support* ($\alpha = 0.43$). In addition to the 3 factored subscales as developed by Groh et al. (2007), the present study tested the individual measures recommended by Zywiak, Longabaugh and Wirtz (2002).

Results

Self-Regulation

The first analysis examined changes in self-regulation scores over the 8 month time frame using repeated measures ANOVA. Results indicated a significant difference between an

initial self-regulation score ($M = 44.3$, $SD = 8.2$) and a self-reported score 8 months later ($M = 46.3$, $SD = 9.9$); $M_{\text{difference}} = 2.0$, $F(1,468) = 24.3$, $p < .001$. This result was consistent with the findings predicted by the cross-sectional analysis that demonstrated a significant relationship between self-regulation and time abstinent (Ferrari, et al., 2007)

Regression with Groh et al. IP Subscales

An initial regression test examined the relationship between the 3 IP subscales, as identified by Groh et al. (2007), and to changes in self-regulation. This analysis was performed using a hierarchical regression with the initial covariate as the initial self-regulation score. This relationship of the initial score to the change in score suggested lower starting scores were more likely to increase than higher starting scores. Other logical covariates were investigated with the results being either insignificant (e.g. time in Oxford House) or not meaningful in influencing the regression coefficients of the social support variables (e.g. sex). The overall regression was significant; $R^2 = .124$, $F(4, 413) = 14.60$, $p < .05$.

With respect to the individual IP subscales, two subscales were significant, *General Social Support* ($\beta = -.10$, $t(413) = -2.10$, $p < .05$) and *Support for Drinking* ($\beta = .11$, $t(413) = 2.27$, $p < .05$). *General Social Support*'s significance was consistent with the hypothesis that positive social support would increase self-regulation. Since *General Social Support* as derived by Groh, et al. (2007) positive contribution to an overall measuring of social support for drinking, the negative beta coefficient suggested that general support was related to increased self-regulation scores. The subscale *Support for Drinking* was positively associated with self-regulation change; $\beta = .11$, $t(413) = 2.27$, $p < .05$ which was not a predicted result.

Regressions with Zywiak et al. (2002) Recommendations

The recommendations for a briefer version of the Important Person Inventory by Zywiak et al. (2002) were partially justified by Index 5's strong association with Index 4 and Index 6 (this was also observed by Groh et al. (2007)). In addition, the multiplicative form of Index 8 and Index 2 captured a significant amount of the total IP variance in their sample (Zywiak et al., 2002). This brief form was tested as independent variables with the change in self-regulation scores. Overall, there were no significant relationships between components of the *Brief Important People Interview* and changes in self-regulation.

Regressions with both Self-Regulation Subscales and Groh et al. IP Subscales

Repeated measures tests were used to measure the significance of observed differences from initial report to report 8 months later for *General Self-Discipline* and *Impulse Control*. Significant differences were found for *General Self-Discipline* ($M_{\text{difference}} = 1.2$, $F(1,468) = 23.9$, $p < .001$) and *Impulse Control* ($M_{\text{difference}} = 0.8$, $F(1,468) = 13.6$, $p < .001$). The regression of changes in *General Self-Discipline* with *General Social Support*, *Support for Drinking* and *Drinking Behavior* was significant overall ($R^2 = .152$, $F(4, 413) = 18.569$, $p < .001$). The only significant IP subscale was *Support for Drinking* ($\beta = .117$, $t(413) = 2.554$, $p < .02$). For *Impulse Control*, the overall regression was significant ($R^2 = .218$, $F(4, 413) = 28.312$, $p < .001$) and the significant IP subscale was *General Social Support* ($\beta = -.114$, $t(413) = -2.586$, $p < .01$).

Discussion

For this longitudinal study of adults in substance abuse recovery, the results were significantly supportive of a relationship between social support and changes in self-regulation scores. While the overall effect sizes were relatively small ($\beta \sim 0.10$), the findings also documented significant relationships that were not specifically predicted. Furthermore,

the multi-factor model of self-regulation was useful in the separation of significant relationships.

The lack of any relationships between *Drinking Behavior* and changes in self-regulation might be indicative of a separate process between abstinence maintenance and self-regulation that does not correlate at all with social network behavior and abstinence. Prior research has documented significant correlations between abstinence and drinking behaviors of friends and family (Groh, et al, 2007; Zywiak, et al., 2002). Thus the independence between social network behaviors and changes in self-regulation might be of interest for future research, especially in assessing the likelihood of an individual pursuing harmful behaviors.

The research questions regarding Impulse Control and General Self-Discipline and their relationship to the 3 factors of social support—*General Social Support* (for drinking), *Support for Drinking*, and *Drinking Behavior*—provided insight on potential relationships and questions relative to better understanding the dynamics of self-regulation changes. While the relationship between impulse control and social support has some intuitive appeal, the positive relationship between *Support for Drinking* and *General Self-Discipline* seems counterintuitive. It may be that this phenomenon resulted from the exercising of self-discipline in an environment of drinking support. This explanation would be consistent with the exercise theory proposed by Galliot et al. (2007). Unfortunately, the current data would not permit the required analysis to support such a link. Clearly, further research on different types of support and their relationship to individual self-regulation resources may be worthwhile.

Another study on Oxford House found improvements in overall self-regulation across a two year timeframe among participants utilizing Oxford Houses versus usual after-care (Jason, et al., 2007). The present study examined more closely self-regulatory processes among persons in recovery. Impulse control, an important component in the self-regulatory processes of adults in substance abuse recovery, supported by previous research investigating substance abuse behaviors and impulsivity (Dom, et al., 2007; Dawe, et al., 2004; Patock-Peckham, et al., 2006, Ferrari, et al., 2007), was found to be associated only with general social support. Despite the relatively small effect size ($\beta \sim 0.10$), further research might include more frequent measurements over a longer time period, to better assess both the rate of change and cumulative effects of general social support on changes in impulsivity.

This research utilized self-report data from a convenience sample of Oxford House residents at the inception of data collection. Longitudinally, the study spanned two measurement completions, 8 months apart, which limited both the ability to assess rates of change as well as cumulative effects. Despite these limitations, the significant findings were robust and generally supportive of current research in social support and self-regulation. Those findings support further research on multi-factor models of self-regulation and social support, especially with respect to addictive or harmful behaviors.

Participants who were adults in substance abuse recovery exhibited significant positive changes in self-regulation resources over the 8 month study time period. These changes were related social support and more specifically, two components of a 3 factor social support model based on the *Important Person Inventory* (IP, Clifford & Longabaugh, 1991: Groh, et al., 2007)—*General Social Support* and *Alcohol Specific Social Support*. In addition, these social support factors were independently related to two subscales of self-regulation (Ferrari, et al., 2007). *General Social Support* was associated with changes in *Impulse Control* and *Alcohol Specific Social Support* was related to *General Self-Discipline*.

These results support further investigation into multi-factor social support and self-regulation models utilizing more observations over a longer time period.

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