**Daily Associations Between Prosocial Behavior, Gratitude, and Selfishness
in Members of Alcoholics Anonymous**

by

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Dedication

This dissertation is dedicated to my participants, and to the person who has always believed in me and been there for me, no matter what. To my big sister, Dr. Tracy Ross. You are my hero. I love you.

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Abstract

The idea that helping others and practicing gratitude is associated with lower selfishness among members of Alcoholics Anonymous (AA) is discussed at length in AA literature, in AA meetings, and among AA members. Specifically, helping others is described as "insurance" against relapse (Alcoholics Anonymous World Services Inc., 2001); gratitude is viewed as a character asset that should be continuously cultivated throughout life (Wilson, 1953); and selfishness is identified as the "root" of alcoholism (Alcoholics Anonymous World Services Inc., 2001). Despite the strong emphasis on these concepts in the literature, relationships between these concepts have not been scientifically investigated.

In this study I employed longitudinal, daily diary research methodology to investigate whether helping others and feeling grateful were associated with lower selfishness among AA members over a period of 7 days ($N = 113$). Multi-level modeling analyses confirmed that on days when participants helped more people compared to their own weekly average, they reported lower selfishness than on days when they helped fewer people. Further, on days when participants were more grateful compared to their own weekly average, they reported lower selfishness than on days when they were less grateful. Lastly, on days when participants helped more people *and* were more grateful, they reported even lower selfishness. Uncovering evidence of an association between these key facets of AA provides valuable insight about the 12-step program.

Keywords: Addiction recovery, helping behavior, gratitude, self-focus, 12-step programs

Chapter 1: Introduction and Specific Aims

Alcoholism is one of the most serious health concerns in America in terms of the strain it places on the healthcare system, the impact it has on the economy, and the number of people who are directly affected by the disorder (National Institute on Drug Abuse, 2005). The 12-step program, Alcoholics Anonymous (AA), is the most widely used recovery support service (Substance Abuse and Mental Health Services Administration, 2016) and method of treatment for alcoholism (Room, 1993), and researchers have shown that the AA program is effective for helping members remain abstinent (Kaskutas, 2009; Kelly, Magill, & Stout, 2009; Kelly, 2013; Magura, McKean, Kosten, & Tonigan, 2013; Pagano, Friend, Tonigan, & Stout, 2004). A recent review of AA research over the last 25 years suggests that many of the benefits gained from AA can be attributed to social, cognitive, and affective mechanisms (Kelly, 2017). Further exploration of these mechanisms and their relationship to one another may help illuminate some of the key features of the 12-step recovery process and help explain how AA has worked for millions of people worldwide.

There are several claims originating from the Alcoholics Anonymous literature about the central role of selfishness in AA members: a) people with alcohol problems tend to be more selfish than those who do not have issues with drinking; b) working through the 12 steps reduces selfishness; and c) failure to become less selfish in recovery has dire—*and perhaps even fatal*—consequences (Alcoholics Anonymous World Services Inc., 2001). Despite these claims,

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researchers have yet to fully investigate selfishness and the role it plays in recovery from alcoholism in the AA program.

Two of the central tenets of AA that may be associated with lower selfishness in AA members are prosocial behavior (helping others) and gratitude. In the AA literature, prosocial behavior is described as "insurance" against returning to active alcoholism (Alcoholics Anonymous World Services Inc., 2001), and gratitude as a "permanent asset" that members should cultivate throughout the course of their lives (Wilson, 1953). Addiction researchers have established that both prosocial behavior and gratitude are beneficial for people in recovery (Crape, Latkin, Laris, & Knowlton, 2002; Pagano et al., 2009; Pagano, White, Kelly, Stout, & Tonigan, 2013), but it is not entirely clear *why* or *how* people are benefitting. To date, no research has specifically explored prosocial behavior, gratitude, and selfishness among AA members. The lack of empirical investigation into these topics is surprising, given the major emphasis placed on all 3 topics in the literature.

In the current project, I employ longitudinal, daily diary methodology to explore the relationships among helping others, gratitude, and selfishness. Specifically, I investigate whether AA members are less selfish on days when they help more people than usual and on days when they feel more grateful. Additionally, I examine whether helping more people *and* feeling more grateful than they usually do has an even greater association with lower selfishness in AA members.

In the following pages, I first describe Alcoholics Anonymous, define selfishness, and explain the history of selfishness in alcoholism and AA. Second, I review previous research on AA and selfishness. Third, I give an overview of the history of prosocial behavior and gratitude in AA, and describe research that links gratitude, prosocial behavior, and selfishness. Lastly, I

outline the current research design, present the study findings, and discuss implications and potential future directions for positive psychology and recovery research.

Chapter 2: Background

What is Alcoholics Anonymous?

Alcoholics Anonymous is a social support group for the treatment of alcoholism that is comprised of 12 steps that, when taken, aim to promote long-term abstinence-based recovery. Members of AA work through each of the 12 steps, which include admitting powerlessness, becoming hopeful for a better future, deciding to do things differently, writing an inventory of resentments, fears, and past behavior, letting go of character defects, making amends for prior transgressions, continuously assessing one's own behavior, developing a daily spiritual practice, and finally, helping others to recover from alcoholism. Membership in the program involves frequent attendance at AA meetings, establishing and maintaining a strong support network of sober peers, and engaging in volunteer and service work. The 12-step model has been adapted to address problems with addiction to other substances (Narcotics Anonymous, Cocaine Anonymous, Marijuana Anonymous, etc.), and other addiction issues (e.g., Gamblers Anonymous, Overeaters Anonymous, Sex and Love Anonymous). With over 2 million members worldwide, AA is the most widely used 12-step program available and is considered the leading approach to abstinence-based recovery (Substance Abuse and Mental Health Services Administration, 2016).

The Role of Selfishness in Alcoholism and Alcoholics Anonymous

Dating back several decades, personality and addiction researchers have consistently identified a relationship between alcoholism and "selfishness." For example, in a longitudinal study that aimed to identify personality traits that are a precursor to alcoholism, researchers discovered a shared personality profile among college students who were then treated for alcoholism 13 years later (Hoffman and Jackson, 1974). Compared to their peers, the students who developed alcoholism later in life were less confident, more socially withdrawn, and had *heightened personal sensitivity* toward the self over a decade before seeking treatment for alcoholism.

Additionally, Hull (1981) proposed the Self-Awareness Model of alcohol consumption, which is based on the premise that alcohol reduces the cognitive processes needed for self-awareness and thus brings psychological relief for people who are overly concerned with and/or hyper-focused on the self. Thus, based on previous research and theory, selfishness may be common among people who are predisposed to alcoholism, and for a time, consuming alcohol may serve the purpose of providing relief from repeated, excessive thoughts about the self.

Hoffman and Jackson's research (1974) and Hull's theory of alcohol consumption (1981) directly align with strong assertions made in the AA literature about a direct relationship between selfishness and alcoholism: "…selfishness—self-centeredness! That, we think, is the root of our troubles." (Alcoholics Anonymous World Services Inc., 2001, p. 62). One of the objectives of the AA program is to help members become less selfish through the 12-step process, and a goal of the AA program (identified as a "promise" from the 9th step of the AA program) is for members to "lose interest in selfish things… self-seeking will slip away" (Alcoholics Anonymous World Services Inc., 2001, p. 84). Additionally, there are stark warnings about the

serious repercussions of continuing to be selfish after entering recovery: "Above everything, we alcoholics must be rid of selfishness. We must, or it kills us!" (Alcoholics Anonymous World Services Inc., 2001, p. 62). Based on these comments from the literature, it is clear to see that reducing selfishness is a vitally important aspect of AA's recovery process. However, there has been surprisingly little empirical investigation into the relationship between selfishness and the inner workings of the Alcoholics Anonymous program.

Defining Selfishness

The exact definition of selfishness is unclear in the AA literature, but the implied meaning appears to be general preoccupation with the self. Thus, in this study, selfishness is characterized by a hyper-focus on and awareness of one's own problems, needs, and desires, and for measurement purposes, selfishness is operationalized as "self-absorption" and "hypersensitive narcissism." McKenzie and Hoyle (2008) separate self-absorption into two categories: Private self-absorption (excessive focus on the self, and public self-absorption (excessive focus on *other people's* thoughts about one's self). Although the two are certainly related, private self-absorption more closely aligns with selfishness as defined above, whereas public self-absorption is more aligned with being overly concerned with judgments made by other people. In addition to private self-absorption, I measured selfishness as hypersensitive narcissism. Like self-absorption, hypersensitive narcissism deals with constant, vigilant attention to the self, but includes elements of both self-and other-focused attention.

The Distinction Between Selfishness and Narcissism

The relationship between alcoholism and the narcissistic personality trait has been identified and explored extensively (Beveridge, 2008; Carter, Johnson, Exline, Post, & Pagano, 2012; Corbisiero & Reznikoff, 1991; Hart & Huggett, 2005; Kohut, 1977; Tonigan, Rynes, Toscova, & Hagler, 2013; van Schoor, 1992). One of the defining characteristics of narcissism is excessive self-focus, or selfishness, usually paired with lack of empathy, need for admiration and adoration, grandiosity, exhibitionism, among other similar traits. Researchers have studied AA members to look for changes in narcissism over time by utilizing a measure of pathological narcissism, which is comprised of the entitlement, exploitativeness, and exhibitionism subscales of the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988). Items from the scale include: "I expect a great deal from other people" (entitlement), "I can usually talk my way out of anything" (exploitativeness), and "I will usually show off if I get the chance" (exhibitionism). While these thoughts and beliefs may be important to look at in this particular population and share an underlying theme of self-focused attention, pathological narcissism measures egotistic attitudes and behaviors, expectations placed on others, and the use of manipulation for personal gain rather than "selfishness." Nonetheless, the study of pathological narcissism in 12-step members is the only existing example of research on selfishness in AA members, and for this reason, current research on the topic is briefly outlined below.

Research on AA and Narcissism

The co-occurrence of narcissism and substance use-disorders has been documented extensively by clinical psychologists (Levin, 1987, 1991; van Schoor, 1992), major figures in psychology, including the founder of self-psychology (Kohut, 1977), and by personality and

addiction researchers (Carter et al., 2012; Hart & Huggett, 2005). There is substantial evidence to support the idea that, in general, people with alcoholism and other substance use disorders have higher levels of narcissism than the general population (Beveridge, 2008; Carter et al., 2012; Corbisiero & Reznikoff, 1991; Hart & Huggett, 2005; Kohut, 1977; Tonigan et al., 2013; van Schoor, 1992). To illustrate, in one study (Tonigan et al., 2013), 12-step participants who were in the beginning stages of recovery had a mean score of 16.98 (SD = 7.32$)$ on the Narcissistic Personality Inventory (Raskin & Hall, 1979), compared to college students' mean NPI score of 9.14 (SD = 4.67) (Twenge, Konrath, Foster, Campbell, & Bushman, 2008). Similarly, 12-step participants' mean on the pathological narcissism subscale of the NPI was 6.38 (SD = 3.67) in the same sample, compared to a general mean of 2.21 (SD = 1.93) from a meta-analysis examining narcissistic personality increases over time (Twenge, Konrath, Foster, Campbell, & Bushman, 2008). Thus, there is evidence pointing to a link between elevated narcissism scores in people with addiction issues. There is little research on AA and narcissism, but little or no research has been conducted on 12-step recovery and selfishness.

Goldman and Gelso (1997) found significant changes in narcissism over the course of addiction treatment. The researchers conducted a longitudinal study of adolescents in a residential addiction treatment program (N = 95) that utilized 3 different treatment modalities: AA's 12 steps, cognitive-behavioral methods (CBT), and confrontational therapy. Narcissism was operationalized by first separating the healthy vs. unhealthy forms, and further breaking unhealthy narcissism into 5 subscales. The most relevant to pathological narcissism as measured by the NPI for comparative purposes are the repressed grandiosity (shame, embarrassment, low self-esteem) vs conscious grandiosity (superiority, domination, perfection) subscales. Goldman and Gelso hypothesized that conscious and repressed narcissism would decrease over the six-

month course of out-patient treatment. Study findings indicated that repressed grandiosity—shame, embarrassment, and low self-esteem—decreased over time, but conscious grandiosity—superiority, domination, perfection—did not change significantly. Out of the seven total measures that were used to measure healthy and unhealthy narcissism, five showed significant change over time. However, the use of cognitive behavioral therapy and confrontational therapy in the treatment of all patients in this study make it impossible to parse apart whether the effects were a result of involvement in AA, or of the other two treatment modalities. Further, the facets of narcissism measured in this study do not map on to selfishness, and this study has not been replicated.

In a similar line of research, Reinert and colleagues (1993) used a cross-sectional design to look at whether more involvement in AA was related to lower pathological narcissism. The researchers compared AA to Rational Recovery (RR), which is a lesser-known alternative to 12-step programs for addiction recovery. Participants were recruited from AA meetings ($n = 107$) and RR meetings ($n = 13$) and divided into groups based on gender, recovery program (AA vs. RR), and level of AA involvement (low, medium, high). Mean length of sobriety among participants was 52.9 months ($SD = 59.2$; approximately 4 years). Researchers expected to find that people who were more involved in AA would be less narcissistic compared to those who were less involved in AA or who were in the rational recovery program. Results showed patterns that were in the expected direction but did not reach significance, indicating lower pathological narcissism among people who were more involved in AA, but not more than could be explained as occurring by chance.

To address the unanswered question in the previous study, Reinert and colleagues (1994) then conducted a longitudinal study to further explore the impact of AA and RR participation on

narcissism over time. Participants (male, $N = 55$; AA $n = 45$, RR $n = 10$) were assessed at 2 points in time; the first at baseline and then again 3 months later. Researchers found that the mean scores on the pathological narcissism scale for each group slightly declined over the course of the study, but the change was not significant. Participant's length of sobriety and previous level of alcohol dependence were explored as potential covariates but there was no evidence that either played a significant role in the outcome. Overall, when considering both studies by Reinert and colleagues, it appears that there could be a weak or moderate relationship between AA participation and lower narcissism, but further study and exploration is needed to make conclusions.

In the only other study on recovery and narcissism (Tonigan et al., 2013), researchers also utilized the pathological narcissism subscale of the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979). In a prospective lagged study design, the researchers tested whether new AA members who attended more meetings in the first 3 months of the study period were more likely to report changes in narcissism at the 6-month follow up ($N = 130$). They also tested whether participant's narcissism scores changed over the course of the 9-month study period. The researchers did not find evidence to support their hypotheses; AA meeting attendance did not predict changes in pathological narcissism after 6 months, and narcissism scores remained stable throughout the study period (Tonigan et al., 2013). The results may

The research studies described above leave us with more questions than answers with respect to understanding whether AA participation is associated with lower selfishness and/or narcissism in AA members. Goldman and Gelso (1997) are the only researchers who found reductions in narcissism over time, but their findings may not generalize to the 12-step membership at large due to the age of the sample (adolescents) and the additional methods of

treatment used during the course of the study (i.e., Cognitive Behavioral Therapy, confrontational therapy methods). Although the remaining literature does not show changes in narcissism over time, there are a few methodological issues that may have contributed to the null findings, as outlined in detail in the following paragraphs.

Potential Explanations for Inconsistencies Across Previous Studies

There are a couple of key issues that may have impacted the results of previous studies. The first is that researchers looked for overall reductions in *trait*-level pathological narcissism, rather than looking for *state*-level changes, or day-to-day fluctuations. A personality trait is a quality or characteristic of an individual that is relatively stable over time (Caspi & Roberts, 1999), whereas a personality 'state' refers to a characteristic or emotion that arises in the moment, depending on context—often a result of a situation or a response to something that has occurred. For example, a person may experience elevated anger in response to a provocation (state-level anger) but is not typically an angry person (trait-level anger). In recent research, narcissism has been linked with state-like qualities, rather than simply being a stable personality trait (Giacomin & Jordan, 2014, 2016; Jordan, Giacomin, & Kopp, 2014). One plausible explanation for the previous null findings could be that researchers looked for changes in a stable personality trait, which is not likely to change, especially not over a short period of time. AA members may experience more state-level fluctuations in narcissistic thought patterns (selfishness), rather than experiencing an overall change in trait-level narcissism. Additionally, the pathological narcissism subscale may not be a good indicator of 'selfishness' as previously defined.

The second issue that may have impacted the outcome of previous research on the relationship between Alcoholics Anonymous and narcissism is the use of AA meeting attendance

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as an indicator of AA participation, rather than actual engagement in the 12-step program. Many people attend meetings during the pre-contemplation stage of recovery, in which they experience consequences and are ordered to attend meetings but have not yet decided to fully invest time and effort into the AA program. It is quite possible for an AA member to attend meetings but not be involved in other important aspects of recovery. As discussed at length in AA literature, there are three parts to the 12-step program: unity (fellowship with other members), service (helping others) and recovery (personal work through the 12-steps). Therefore, quantifying AA participation by using a sum score of the number of AA meetings (i.e., fellowship) attended is not necessarily an accurate measure of AA involvement. Further, Tonigan and colleagues (2013) limited participation in their study to people who had no more than 16 weeks of AA exposure over the course of their life. In other words, they used a sample that was in the very early stages of recovery, and who had little to no previous experience with AA. This is significant because regular attendance at AA meetings is heavily emphasized during early recovery; the AA slogan "90 & 90," refers to the suggestion that new members attend one meeting every day for ninety days (Alcoholics Anonymous Grapevine, May 2018 edition). However, in Tonigan and colleagues (2013) study, the average number of AA meetings attended per week was two, which suggests participants may have simply been attending AA meetings as opposed to participating in the recovery process. Under these circumstances (AA meeting attendance alone), even if AA participation did reduce narcissism, this sample would likely not show reductions based on their level of engagement in the AA program.

Prosocial Behavior as a Measure of AA Engagement

A more thorough approach to measuring AA participation is to assess an AA member's level of involvement in service work within AA, or prosocial behavior. In the context of AA, prosocial behavior refers to any act that contributes to another person's continued sobriety, including providing emotional support, helping people get to AA meetings, and/or mentoring (i.e., sponsoring) newer members of AA (Pagano et al., 2010), among others.

The entire program of Alcoholics Anonymous was founded on the principle of one [sober] alcoholic helping another alcoholic get sober (Alcoholics Anonymous World Services, 2001). The importance of prosocial behavior is made apparent throughout the AA program literature: "Our very lives, as ex-problem drinkers, depend upon our constant thought of others and how we may help meet their needs" (Alcoholics Anonymous World Services Inc., 2001, p. 20). Prosocial behavior is described as "insurance" against a relapse (2001, p. 181), and as the "foundation stone of recovery" (2001, p. 97); most active AA members engage in prosocial behavior on a regular basis. Thus, using this aspect of the AA program rather than measuring meeting attendance is a more meaningful measure of AA participation.

Research on Prosocial Behavior in AA

There is a growing body of literature in addiction research on the benefits of prosocial behavior for people in recovery (Crape et al., 2002; Pagano et al., 2009; Pagano et al., 2013). Zemore and colleagues (2004) conducted a longitudinal study of people in treatment for addiction ($N = 279$) and found that more prosocial behavior toward others in treatment predicted less binge drinking and more involvement in 12-step programs six months later. Additionally, higher involvement in 12-step programs predicted increased chances of abstinence at follow up,

indicating that prosocial behavior indirectly contributes to better outcomes for people in recovery.

In another study that looked at prosocial behavior in AA, Pagano and colleagues (2004) conducted a longitudinal study using data from a large clinical trial on alcoholism (Project MATCH). Researchers examined whether participants who helped other people during addiction treatment were more likely to still be abstinent twelve months later ($N = 1726$). They found that among the participants who helped others, 40% maintained continuous sobriety at the follow up assessment 12 months later, compared to 22% of people who did not help others during treatment. In other words, those who helped others while being treated for alcoholism were twice as likely to still be sober one year later. Taken together, the findings from these studies indicate that 12-step members benefit from engaging in prosocial behavior, and yet it is not entirely clear *why* they benefit. Thus, given the important role of both selfishness and prosocial behavior in Alcoholics Anonymous, examining day-to-day associations between the two concepts may help uncover the mechanism behind the benefits of prosocial behavior for this population.

Gratitude as an Additional Consideration

Gratitude is another important aspect of AA to consider in the association between prosocial behavior and selfishness in AA members. Although gratitude is not explicitly mentioned in the 12-steps, in another AA book, *Twelve Steps and Twelve Traditions* (Wilson, 1953), gratitude is described as a character trait that AA members should seek to cultivate throughout their lives. To highlight the importance of gratitude in AA, a keyword search for the words 'grateful' and 'gratitude' was conducted in the digital archives of AA's international journal, *The AA Grapevine*. The Grapevine is a monthly publication that contains essays written

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by AA members, and thus contains insight into important concepts in AA spanning seven decades (1940-2010). The words 'gratitude' and 'grateful' returned a total of 4,499 hits[1]. For context, a search using the word 'steps' returned 5,474 hits, and 'service' returned 3,973 hits (see Figure 1 for a visual representation that includes additional key AA words).
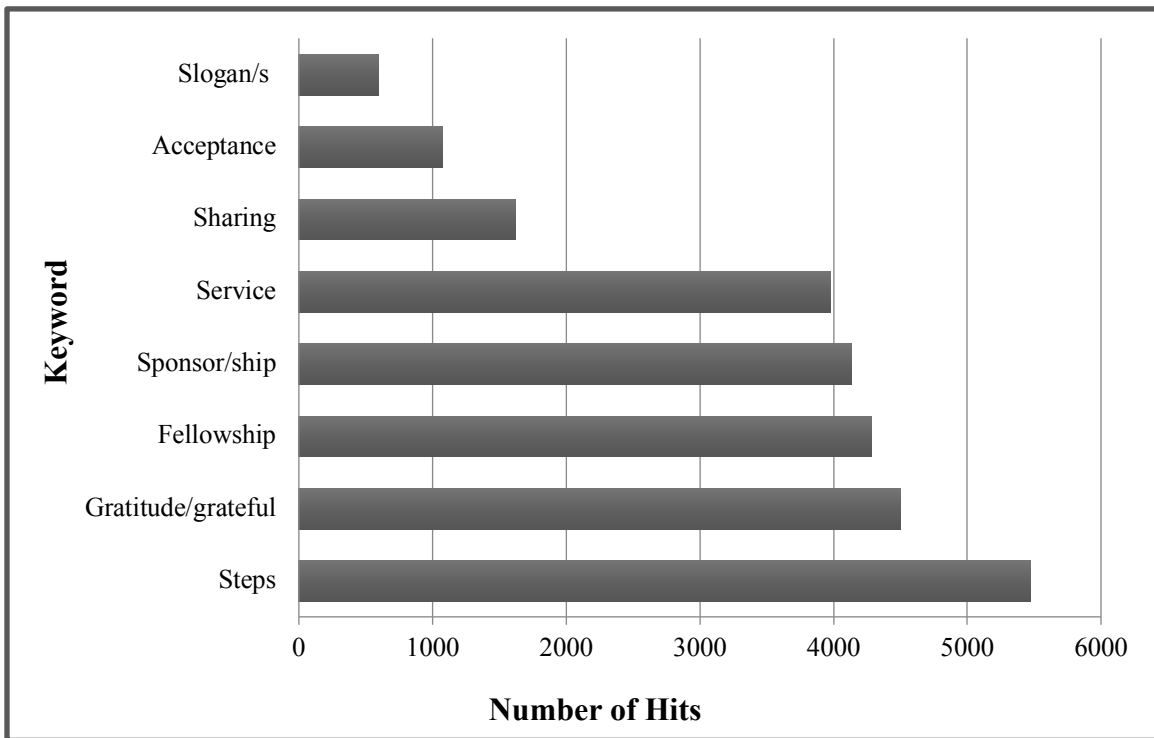
Figure 1. Keyword search for the words 'gratitude' and 'grateful' in the AA Grapevine digital archives.

The prevalence of the words gratitude and grateful indicates that members write about it frequently, confirming that gratitude is an important concept in AA. Further, a major theme in

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[1] Retrieved February 9, 2016 from http://www.aagrapevine.org/archive/Archive.html

the AA Grapevine is feeling grateful for help received and expressing gratitude through prosocial behavior (Alcoholics Anonymous World Services Inc., 1940-2010). These themes imply that gratitude and prosocial behavior are not only important in AA, but that they may operate together.

Indeed, researchers have shown that gratitude arises in response to prosocial behavior (McCullough, Kilpatrick, Emmons, & Larson, 2001), motivates people to reciprocate help received from others (Bartlett & DeSteno, 2006), which then, in turn, triggers "upward spirals of mutually responsive behavior" (Algoe, 2012, p. 455). Research also shows that gratitude lessens depressive symptoms by directing attention away from self-preoccupation (Emmons & McCullough, 2004). In the only currently existing research on gratitude and AA members, Krentzman and associates (2015) found that a gratitude intervention significantly increased positive affect and decreased negative affect among people in treatment for substance use disorder.

Thus, in a population of people in recovery, gratitude and prosocial behavior may work together to serve the purpose of shifting focus away from self (gratitude) and placing it on others (prosocial behavior). For example, when a 12-step member is overwhelmed by their own cares and concerns, helping someone else may shift the focus from the self onto the person being helped. However, according to the AA literature, the 12-step member eventually returns to their characteristic self-centered thinking; to which the solution is cited as, once again, to engage in more helping behavior (Alcoholics Anonymous World Services Inc., 2001). This cycle of reciprocal prosocial behavior—infused with gratitude—may be one of the underlying mechanisms at work in the Alcoholics Anonymous program. It may also be the reason why lifelong participation in AA is encouraged and common to many AA members, and also may

explain, in part, why some people return to drinking after discontinuing participation in AA. A first step toward investigating this potential mechanism is to examine associations among these variables in 12-step program members.

Research on Prosocial Behavior, Gratitude, and Narcissism

Researchers have uncovered interesting links between prosocial behavior and narcissism, as well as between gratitude and narcissism. For example, Giacomin and colleagues (2014, 2016), made an important contribution to research on the relationship between prosocial behavior and narcissism by examining changes in *state-level* narcissism, rather than *trait*-level narcissism. They found that priming participants with a communal focus (i.e., instructing participants to think about others) reduced state-level narcissism. That is, after people were told to think prosocially (about others), as opposed to independently (about themselves), they reported less narcissism.

Several studies have documented that people who are more narcissistic are less grateful than people who are less narcissistic (Farwell & Wohlwend-Lloyd, 1998; Wetzel, Leckelt, Gerlach, & Back, 2016). In one study ($N = 430$), higher narcissism was related to lower gratitude scores (Wetzel et al., 2016), and in another, participants ($N = 56$) higher in narcissism reported feeling less grateful toward their partner after a creativity task compared to people lower in narcissism (1998). The findings indicate that people who are more narcissistic may be lower in gratitude.

Indeed, previous researchers have posited that aspects of narcissism may hinder gratitude (McCullough et al., 2001; Watkins, Woodward, Stone, & Kolts, 2003), and recent studies provide evidence to support this theory (Solom, Watkins, McCurrach, & Scheibe, 2016). In one study that aimed to identify traits that thwart gratitude, narcissism inhibited gratitude over and

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above materialism, envy, and cynicism (Solom et al., 2016). Although the results of this study indicate that that narcissism inhibits gratitude, this finding may not generalize to 12-step members. People in AA are surrounded by prosocial behavior (both giving and receiving), which induces gratitude (Emmons & McCullough, 2003; McCullough, Emmons, & Tsang, 2002; McCullough et al., 2001); the consistent exposure to prosocial behavior may undo the inhibitory effect of narcissism on gratitude. Alternately, *gratitude* may have an inhibitory effect on *narcissism* among AA members, and potentially modify the relationship between prosocial behavior and narcissism.

Summary

In the 12-step recovery program of Alcoholics Anonymous, AA members attempt to help others with their sobriety and spend less time thinking about their own cares, worries, and concerns. Previous research has looked at prosocial behavior in AA, at gratitude in AA, and at AA participation and narcissism, but have not considered or explored relationships among all three concepts. Further, previous researchers have found little evidence to support the proposition that AA participation is related to lower narcissism, but the lack of evidence may be due to key methodological and/or measurement issues.

In the current project, I address previous methodological issues in several ways. First, I investigate selfishness specifically (rather than trait narcissism or pathological narcissism more generally) by using scales that capture selfishness (i.e., self-absorption scale and hypersensitive narcissism scale). Second, I examine *temporary fluctuations* in selfishness, rather than *permanent reductions*. Third, I use daily prosocial behavior towards other members in AA (i.e.,

the foundation of the AA program—one alcoholic helping another) as a means of measuring AA participation, in addition to the standard use of AA meeting attendance.

The primary goal of the project was to investigate daily associations between prosocial behavior, gratitude, and selfishness in members of Alcoholics Anonymous. Studying these important concepts from AA may uncover information about relationships between key features of the AA program. Further, the associations between general prosocial behavior, gratitude, and selfishness have implications that extend beyond addiction treatment to the broader community.

Chapter 3: The Current Study

Is there a relationship between prosocial behavior, gratitude, and selfishness in members of AA? In other words, on days when AA members help more people and are more grateful than usual, do they think about their own cares, concerns, and worries less? In this study, I examine daily associations between prosocial behavior, gratitude, and selfishness (i.e., self-absorption and hypersensitive narcissism) in members of AA using a longitudinal, repeated measures design. Specifically, I assess whether engaging in more prosocial behavior or being more grateful on a given day is associated with less self-absorption or hypersensitive narcissism on that same day. Additionally, I explore whether gratitude moderates the relationship between prosocial behavior and self-absorption or hypersensitive narcissism. See Figure 2 for conceptual models.
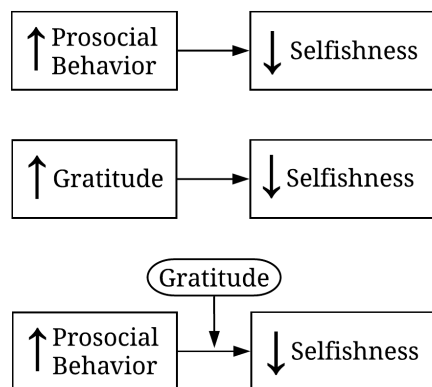
Figure 2. Conceptual models for predicted daily associations between variables. See specific hypotheses in Chapter 4 for complete description of each model.

Method

Participants

Sample size was determined according to recommendations made by Maas and Hox (2005), in which they indicate a sample of at least 50 participants with more than 5 time points is sufficient for multilevel modeling repeated measures statistical analyses. Members of Alcoholics Anonymous were recruited online through social media sites (i.e., Twitter, Facebook), email listservs for people in recovery, and through snowball sampling. Additionally, a recruitment email was sent to participants from previous recovery studies (i.e., Life in Recovery Study 1 and 2; LaBelle & Edelstein, 2017) who agreed to be contacted in the future about new study opportunities.

Upon initial recruitment, all potential participants answered 5 questions to determine their eligibility for the study. Participants had to be at least 18 years old and a member of AA with at least 90 days of continuous sobriety. Additionally, they needed to have a sponsor and consider themselves an 'active member' of AA (self-defined). These criteria were established to capture people who were not simply attending AA meetings casually and/or sporadically, but who were involved in the 12-step process of recovery. The decision to recruit in this manner was driven by knowledge that the concepts being explored in this study are integral parts of the AA program, and AA meeting attendance alone is not necessarily a strong indicator of involvement in the 12-step recovery program.

In total, 239 people were screened for eligibility, of which 68 were excluded for not meeting the study criteria. An additional 28 participants were excluded for only completing one portion of the study; given the focus of the study was on daily associations, participants with baseline data but no daily reports were removed, and participants with daily reports but no

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baseline data were removed due to lack of demographic information. This group of participants

may have entered the study after it was already underway via sharing of the survey link from a

study participant. Ten additional participants were excluded for either not completing the

baseline survey (or any daily reports) or for not being willing to participate in the second portion

(daily reporting) of the study. An additional 20 people were placed into a control group that

provided baseline data and submitted daily reports about neutral topics throughout the day (e.g.,

what they ate, how much they slept, etc.) rather than reporting on helping behavior, gratitude,

and selfishness. This group was used to investigate whether daily reporting of the variables being

studied influenced the results. The total number of participants in the final sample was 113. See

Figure 3 for a complete participant recruitment flow chart.
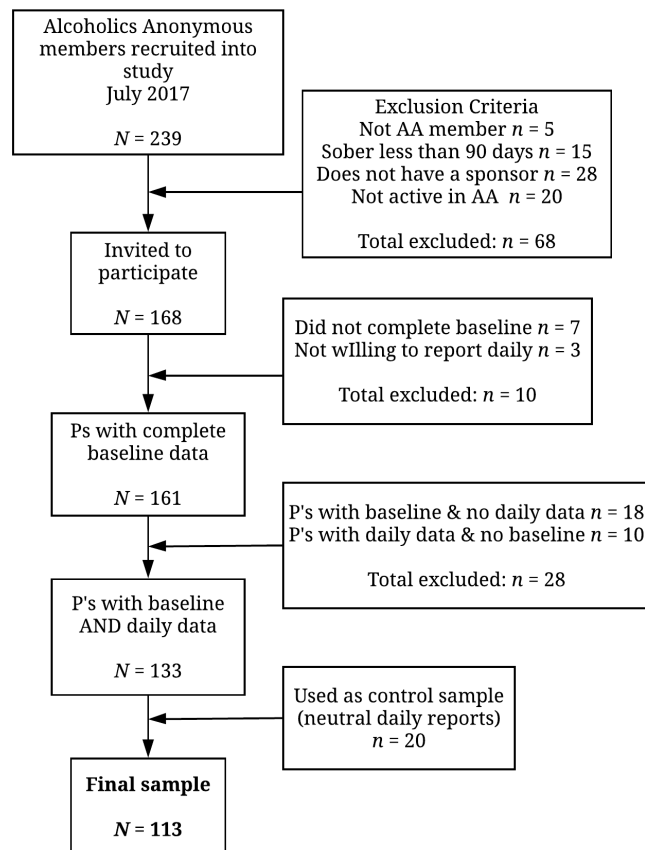
Figure 3. Participant Recruitment Flow Chart

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Participants were compensated up to $20 for their time at the end of the study; $15 for the initial survey, with a $5 bonus for reporting all 7 days. Baseline surveys were completed on a laptop or desktop computer, and daily report surveys were optimized for completion on a mobile phone. Informed consent was obtained from each participant prior to taking the baseline survey.

The primary country of residence for the sample was the United States of America (98% USA; 1% England, 1% France). The sample was largely Caucasian (90%; 1% African American, 4% Hispanic, 1% Native American/Alaskan Native, 2% Asian, and 2% Bi/multiracial) and almost two-thirds of the sample were women (67%). Age of participants ranged from 19 to 70 years old, with a mean age of 36.21 ($SD = 11.85$). A little more than half of the participants reported that they were in a romantic relationship (31% in a relationship, 27% married) and most of the sample had a college degree or previously earned college credit (40% some college, 33% associate's or bachelor's degree, 18% master's degree, 6% JD/MD/PhD). Average annual income varied across the sample; 28% earned between $0-25,000; 35% earned $25-50,000; 24% earned $50-75,000; and 14% earned $75,000 or more. A little more than a quarter of the sample were students (27%).

Procedure

The survey was created using the Qualtrics platform, which allowed for the suppression of individual computer IP addresses as an extra precaution to ensure that participants remained anonymous. To link the baseline and daily surveys together, each participant created a unique identifier that was entered at the beginning of each daily survey.

In the initial baseline survey, I collected the participant's basic demographic information including gender, age, ethnicity/race, education level, primary addiction, and total length of

sobriety. The daily report surveys started 5 days later when optimal sample size had been

achieved. Over the course of the 7-day daily reporting period, participants filled out a 10-minute

survey each night that included measures of prosocial behavior, gratitude, selfishness, and

overall positive and negative affect for that day. Email and text message reminders were sent to

participants at 8pm with a survey link. All surveys were sent out in the participants' designated

time zone, to ensure everyone received the survey at 8pm. The number of daily reports submitted

each night ranged from 82 to 105 (M=89.6). See Table 1 for details about the number of daily

reports that were submitted by participants over the 7-day study period.

Table 1.

Daily Report Submissions by Participants.

Number of Days Reported	Number of Participants
7 days	59
6 days	19
5 days	6
4 days	5
3 days	5
2 days	7
1 day	12

Measures

Baseline Measures

Demographic questionnaire. Basic demographic information was collected along with information about the participants' personal recovery, including primary addiction (alcohol or drugs), length of time sober, number of weekly meetings, whether they had served as a sponsor, and whether they were currently working through the 12-steps. Additionally, information about student status (if yes, number of classes currently enrolled in) and caretaking duties (have child[ren] and/or adult relative living with them). Caretaker information was collected as a possible control measure for prosocial behavior; being a full-time student or a caretaker may limit the amount of time a participant is able to engage in prosocial behavior toward other AA members.

Prosocial Behavior. The 20-item Altruistic Personality Scale (Rushton, Chrisjohn, & Fekken, 1981) was used to measure participants' baseline trait-level (non-AA) prosocial behavior (α = .82). For each item, participants indicated how often they engaged in the activities listed on a 5-point scale (1 = never to 5 = very often). Sample items include "I have offered my seat on a bus or train to a stranger who was standing" and "I have helped an acquaintance to move households." The scale is scored as a continuous measure, with higher scores indicating higher levels of altruism.

Gratitude. The 16-item short form of the Gratitude, Resentment, and Appreciation Test (GRAT; Watkins et al., 2003) was used to measure baseline levels of trait gratitude (α = .80). Participants reported their agreement with each statement on a 9-point scale (1 = strongly disagree to 9 = strongly agree). Sample items include "I couldn't have gotten where I am today without the help of many people," "For some reason I don't seem to get the advantages that

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others get," and "I think it's important to appreciate each day that you are alive." The GRAT is divided into 3 subscales: Lack of a Sense of Deprivation (LOSD), Simple Appreciation (SA), Appreciation for Others (AO). Item responses were summed for each subscale and combined to obtain an overall score for the scale. Higher scores represent higher levels of gratitude.

Narcissism. Baseline levels of trait narcissism were assessed with the 13-item version of the Narcissistic Personality Inventory (NPI-13; Gentile et al., 2013). This version of the NPI has a total of 7 subscales, including 3 subscales that are used to define pathological narcissism (Entitlement, Exploitativeness, and Exhibitionism), which have been used in previous studies as a proxy for selfishness. Sample items from these three subscales include "I insist upon getting the respect that is due me" (Entitlement); "I find it easy to manipulate people" (Exploitativeness); and "I really like to be the center of attention." (Exhibitionism). Participants indicate whether they agree by answering "yes" or "no" to each statement. One point is assigned to each response that aligns with the scoring key, and then points are summed for an overall narcissism score ranging from 1 to 13. The same procedure is used for each of the subscales. Cronbach's alpha for the 13 items in this sample was .49.

Covariates

Extraversion. The Ten-Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann Jr, 2003) was used to assess big 5 personality traits: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Participants were given a pair of similar adjectives (e.g., extroverted, enthusiastic) and asked to rate how well the adjectives described their personality on a 7-point scale (1 = strongly disagree to 7 =strongly agree). The measure was scored by averaging the 2 items that represent each of the 5 personality traits. Higher scores are indicative

of higher levels of the trait being measured. Cronbach's alpha for the extraversion subscale was .83.

Social Desirability. The 10-item short version of the Marlowe Crowne Social Desirability Scale (MC-1; Strahan & Gerbasi, 1972) was used to assess social desirability ($\alpha = .63$) to determine whether participants tend to respond truthfully or portray a positive image by exaggerating or inflating their responses. The scale consists of true/false statements such as "I am always courteous, even to people who are disagreeable," and "I am sometimes irritated by people who ask favors of me." Scores are coded as $0 =$ false and $1 =$ true and summed. Higher scores indicate higher tendency to respond in a socially desirable manner.

Psychological Distress. Symptoms of emotional distress were measured using the 6-item Kessler non-specific psychological distress measure (K-6; Kessler et al., 2002). Participants indicated to what extent they experienced symptoms over the last 30 days on a 5-point scale ranging from $1 =$ none of the time to $5 =$ all of the time. Sample items include "nervous," "restless/fidgety", and "worthless." The K-6 is scored by calculating the mean across all items; a higher score indicates higher psychological distress. Cronbach's alpha for the 6 items in this sample was .86.

Addiction Severity. Severity of addiction was measured with the 17-item Short Inventory of Problems – Revised (SIP-R; Kiluk, Dreifuss, Weiss, Morgenstern, & Carroll, 2013). The SIP is comprised of 5 subscales, including impulse control, interpersonal, intrapersonal, physical, and social consequences of addiction. Participants indicated how often they experienced consequences during the period that they were using alcohol and/or substances on a 4-point scale ($0 =$ never, $1 =$ once or a few times, $2 =$ once or twice a week, or $3 =$ daily or almost daily). Sample items include "My physical health has been harmed by my drinking or drug use" and

"My drinking or drug use has damaged my social life, popularity, or reputation." Items were summed for each subscale and a mean score was calculated for each subscale, and a grand mean score was calculated across all subscales for a total addiction severity score. Cronbach's alpha for the 17 items in this sample was .90

Recovery Capital. The Brief Assessment of Recovery Capital (BARC; Vilsaint et al., 2017) was used to assess AA members' engagement in recovery ($\alpha = .79$). Defined as 'the breadth and depth of internal and external resources that can be drawn upon to initiate and sustain recovery" (White, 2008; p. 1), recovery capital measures the participant's access to psychological, social, and environmental resources that are important for recovery. Participants responded to each of the 10 items by indicating their level of agreement on a scale ranging from 1 = strongly disagree to 6 = strongly agree. Sample items include "I get lots of support from friends", "I am proud of the community I live in and feel a part of it", and "I regard my life as challenging and fulfilling without the need for using drugs or alcohol." Recovery capital is assessed by calculating a mean score across all items.

Daily Measures

Prosocial Behavior in Alcoholics Anonymous. AA-related helping behavior was measured with the 12-item Service to Others in Sobriety Scale (SOS; Pagano et al., 2010). The SOS assesses participation in helping behavior in AA (e.g., sharing a personal story with another member, taking calls from/spend time with a sponsee) over the previous month. However, the time period for the scale was modified from the original 30 days to a single day, and the responses were changed to a dichotomous format. Participants simply reported whether they engaged in the behavior over the course of that day (yes/no). Cronbach's alphas for the 12 items were calculated for each of the 7 days and ranged from .79 to .87.

Gratitude. The Gratitude Adjectives Checklist (Emmons & McCullough, 2003) was used to measure participant's daily gratitude. Participants were asked to rate each adjective (grateful, thankful, appreciative) according to how they felt that day on a 5-point scale (1 = very slightly or not at all to 5 = extremely). Items were summed to create a total score. Higher scores indicated higher levels of gratitude. Cronbach's alphas that were calculated across the 3-items for each day ranged from .91 to .95.

Selfishness. The Self-Absorption Scale (SAS; McKenzie & Hoyle, 2008) was used to measure excessive and sustained maladaptive focus on the self. The Self-Absorption Scale is comprised of two subscales that measure private self-absorption (thoughts about ones' own self; e.g., I thought about myself more than anything else), and public self-absorption (thinking about what *other people* think about one's own self; e.g., It upsets me when people don't like me). Each night, participants indicated their level of agreement with each of the 17 items on a 5-point scale (1 = not at all like me to 5 = very much like me). The SAS was modified for this study from a general measure of self-absorption to a state-like measure by changing the tense of each item from present tense to past tense and adding the word "today" to the sentence. For example, the original item, "I think about myself more than anything else" was modified to "I *thought* about myself more than anything else *today."* The SAS is scored by creating a mean across each subscale, with higher scores indicating higher levels of private or public self-absorption. In this sample, the Cronbach's alpha for daily reported private self-absorption ranged from .87 to .94 across all 7 days; for public self-absorption Cronbach's alpha ranged from .84 to .95.

The Hypersensitive Narcissism Scale (HSNS; Hendin & Cheek, 1997) was used to identify daily experiences of selfishness. Each night, participants indicated the extent to which they experienced each of the 12 items throughout the day on a Likert scale ranging from 1 = very

uncharacteristic/untrue/strongly disagree to 5 = very characteristic/ true/strongly agree. The HSNS was modified for this study from a global measure of Hypersensitive Narcissism to a state measure by changing the tense of each item from present tense to past tense and adding the word "today" to the sentence. For example, the original item "I *can become* entirely absorbed in thinking about my personal life, my health, my cares, or my relationships" was modified to "I *was* entirely absorbed in thinking about my personal life, my health, my cares, or my relationships *today*. Hypersensitive narcissism was determined by summing all responses and calculating a mean score across all items. Cronbach's alpha ranged from .72 to .85 across all 7 days.

Mood. The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was used to measure daily fluctuations in mood. Participants were given a list of 10 emotions (e.g., interested, upset) and asked to rate how much they felt each emotion over the last day on a 5-point scale (1 = very slightly to 5 = extremely). The measure was scored by calculating the mean for the positive and negative affect subscales. In this sample, the Cronbach's alpha for positive affect calculated for each day ranged from .77 to .87; and for negative affect the range was .79 to .86.

Chapter 4: Statistical Model and Analytic Approach

The Statistical Package for the Social Sciences (SPSS, version 24) was used to conduct all analyses. To prepare the data, all data files were matched on the participant's unique identifier and merged to create a single master file.

My first set of hypotheses were predictions about simple correlations between mean scores for pro-social behavior, gratitude, self-absorption, and hypersensitive narcissism. To explore these relationships, I created a weekly average for each daily report variable by summing participants' daily mean scores for each day in the 7-day study period and dividing it by the number of daily reports submitted by the individual. Specific hypotheses are listed below:

Hypothesis 1 a: Prosocial behavior in AA will be significantly and positively correlated with gratitude.

Hypothesis 1b, c: Prosocial behavior in AA will be significantly and negatively correlated with b) private self-absorption, and c) hypersensitive narcissism.

Hypothesis 1d, e: Gratitude will be significantly and negatively correlated with d) private self-absorption, and e) hypersensitive narcissism.

Correlational findings are presented in Table 2 and discussed at length in the results section.

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My next set of hypotheses consisted of predictions about same-day associations (is day 1 prosocial behavior associated with day 1 self-absorption?). I used multilevel linear modeling (MLM; Raudenbush & Bryk, 2002) to examine the associations among daily report variables. Multilevel modeling is the preferred method of analysis for longitudinal data; MLM is capable of testing trends and interactions among variables, and accounts for non-independent assessments (days nested within individuals), while also allowing for missing data, which is important for repeated measures research designs. A repeated measures design was selected over a simple cross-sectional design to strengthen the argument for same-day associations across time among the variables of interest.

This decision to examine daily associations (as opposed to next-day causal or lagged relationships) was based on the idea that activities which "protect" one's sobriety (e.g., prosocial behavior, step work, etc.) are most impactful on the day they are carried out. Thus, I collected daily reports to explore how helping others and being grateful play out in everyday life, and to discover whether associations between these variables and selfishness are consistent across multiple days. In other words, I aimed to assess whether more prosocial behavior and higher gratitude are associated with lower selfishness (private self-absorption and hypersensitive narcissism) on a given day, and if the association is seen repeatedly over the course of the 7-day study period.

My specific hypotheses 2a-c (private self-absorption) and 3a-c (hypersensitive narcissism) were as follows:

```
┌─────────────┐        ┌─────────────┐
│ ↑ Prosocial │───────▶│ ↓ Self-     │
│   Behavior  │        │   Absorption│
└─────────────┘        └─────────────┘
```

Figure 4. Hypothesis 2a: More daily prosocial behavior will be associated with lower

levels of *private self-absorption* on that same day.

```
┌─────────────┐        ┌─────────────┐
│ ↑ Gratitude │───────▶│ ↓ Self-     │
│             │        │   Absorption│
└─────────────┘        └─────────────┘
```
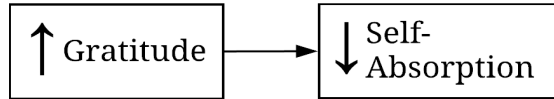
Figure 5. Hypothesis 2b: More gratitude on a given day will be associated with lower

levels of *private self-absorption* on that same day.

```
              ⬭ Gratitude ⬭
                    │
                    ▼
┌─────────────┐        ┌─────────────┐
│ ↑ Prosocial │───────▶│ ↓ Self-     │
│   Behavior  │        │   Absorption│
└─────────────┘        └─────────────┘
```
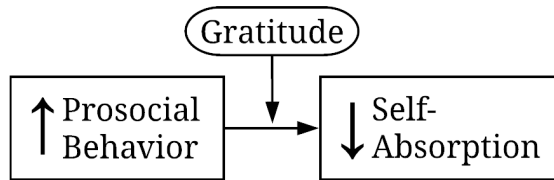
Figure 6. Hypothesis 2c: Gratitude will moderate the association between prosocial

behavior and *private self-absorption* on a given day, such that the association will be

significantly greater when gratitude is included than prosocial behavior alone.

```
┌─────────────┐        ┌──────────────────┐
│ ↑ Prosocial │───────▶│ ↓ Hypersensitive │
│   Behavior  │        │   Narcissism     │
└─────────────┘        └──────────────────┘
```
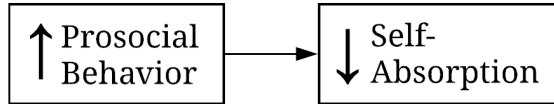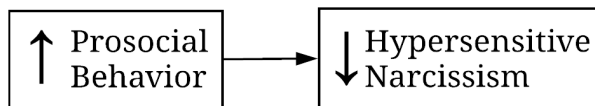
Figure 7. Hypothesis 3a: More daily prosocial behavior will be associated with lower

levels of h*ypersensitive narcissism* on that same day
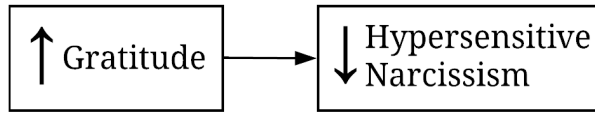
Figure 8. Hypothesis 3b: More gratitude on a given day will be associated with lower levels of *hypersensitive narcissism* on that same day.
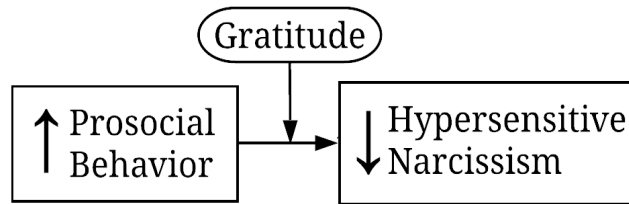
Figure 9. Hypothesis 3c: Gratitude will moderate the association between prosocial behavior and *hypersensitive narcissism* on a given day, such that the association will be significantly greater when gratitude is included than prosocial behavior alone.

To prepare the data for MLM analyses, the data were "stacked" in long format; each participant had 7 rows in the data set, with one single row representing one daily report. I used the first order autoregressive covariance structure (AR1), which accounts for higher correlations among the time-adjacent daily reports (i.e., days 1 and 2, vs. days 1 and 4), and also accounts for the systematically decreasing correlation with increasing distance between daily reports. For example, the error correlation between days 1 and 2 (ρ^{t1-t2}) is less than the correlation between days 1 and 3 (ρ^{t1-t3}), and even less between days 1 and 6 (ρ^{t1-t6}). As recommended by Albright and Marino (2015), I used the restricted maximum likelihood estimation method (REML) in my analyses rather than the maximum likelihood method (ML). REML takes into account the degrees of freedom from fixed effects and as a result produces variance component estimates that are less biased than the estimates produced by the ML method.

Grand-Mean Versus Person-Mean Centering of Predictors

An additional consideration for multilevel modeling is whether to center the predictor variables around the sample mean or around the participants' own mean. In a standard regression analysis, predictor variables are typically centered around the sample (or group) mean, which creates an intercept that represents the expected value for an observation at the sample mean for all the predictors in the model. Predictors centered on the sample mean return estimates that indicate a participant's score relative to the mean of the entire group. However, in multilevel modeling, the additional level of analysis allows for the centering of predictors around the participant's own mean (across days 1-7), which returns estimates that indicate the participants' score relative to their own weekly mean (rather than the group mean). Individuals within a sample have different averages across days (e.g., one person has a higher gratitude mean across days 1-7 than another), and the effects of the predictor variables may differ when they are high or low relative to the person's own typical experience.

A major advantage of daily report data is the ability to test both centering approaches to understand which matters more: the effect of a predictor when based on the individual's own experience or on the group's experience. Thus, I ran two sets of analyses using both centering methods: the first with the grand-mean centered daily predictors (i.e., prosocial behavior, gratitude) and the second set with the person-mean centered daily predictors.

A random intercept was included to account for individual differences in the outcomes (i.e., self-absorption and hypersensitive narcissism) around the fixed intercept. Additional random effects were tested to allow for individual variation in the slopes estimating the association of daily prosocial behavior and gratitude with self-absorption and hypersensitive narcissism. In the person-mean centered models, the intercept reflected the mean of the outcome

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when the predictor is zero and represents each individual's average across all days. For example, one individual may have had an average score of 2.7 across the 7 days, whereas another had an average score of 0.5. In the person-centered approach, these individual means are subtracted from each day's score; anything above zero indicates higher than that person's average, and anything less than zero is lower than that person's average, regardless of the average group score. In contrast, zero represents the mean for the entire sample in the mean-centered models.

In all analyses, the person-mean centered models were a better fit according to the model fit statistics; for this reason, only the person-mean centered models are reported in the results section. There were no major divergences between significance levels of the results when comparing models that used group-mean centered versus person-mean centered variables.

Selection of Control Variables

Prior to collecting data, I formulated a list of variables that may impact daily prosocial behavior and gratitude. The variables included basic demographic information (gender, age), personality characteristics (trait gratitude, extraversion), daily mindset measures (negative affect, psychological distress), recovery-related information (number of weekly meetings attended, number of sponsees, length of sobriety, addiction severity), and day-to-day factors (e.g., amount of social contact). Lastly, I entered social desirability into the analyses to account for participants' tendency to report in a socially desirable way. I initially planned to control for positive affect and age but discovered strong correlations with other key variables during preliminary analyses (positive affect and gratitude, $r = .62$; age and length of sobriety, $r = .71$) and subsequently took them out of the models to prevent multicollinearity as suggested by Clark (2013).

Using the forward step procedure (Nezlek, 2012), I began each set of analyses with the simplest (empty) model and then added covariates one by one to test for significance. All covariates that were not significant in any of the models across all sets of analyses were excluded from final analyses to improve model fit. Specifically, the effects of the number of AA meetings attended, addiction severity, extraversion, and number of sponsees were not significant predictors of any of the outcomes and were removed from all analyses. After the removal, a total of seven covariates were included in each of the final models: gender, length of sobriety, baseline gratitude, psychological distress, social contact, social desirability, and negative affect.

Building the Models

For each set of analyses conducted for the outcome variables (i.e., private self-absorption, public self-absorption, and hypersensitive narcissism), I estimated a total of 4 models (12 total across all 3 outcomes) using the mixed command in SPSS (MIXED). Model 1 estimated the effects of prosocial behavior on the outcome; model 2 estimated the effects of daily gratitude; model 3 estimated the effects of both prosocial behavior and daily gratitude, and model 4 estimated the effects of the interaction between prosocial behavior and daily gratitude. All 4 models were repeated for each of the three outcome variables.

More specifically, I used a two level, multilevel model to estimate day level (level 1) and person level (level 2) associations between daily prosocial behavior, gratitude, and each of my outcomes (private self-absorption, public self-absorption, and hypersensitive narcissism), as indicated in the model equations below:

$$DV_{ij} = \beta_{00} + \beta_{10}(prosocial\_day_{ij}) + e_{ij} \qquad (1)$$

$$DV_{ij} = \beta_{00} + \beta_{20}(gratitude\_day_{ij}) + e_{ij} \qquad (2)$$

$$DV_{ij} = \beta_{00} + \beta_{10}(prosocial\_day_{ij}) + \beta_{20}(gratitude\_day_{ij}) + e_{ij} \qquad (3)$$

where DV_{ij} is the total outcome (private self-absorption, public self-absorption, or hypersensitive narcissism) reported for day i and person j, the prosocial_day$_{ij}$ variable refers to the amount of prosocial behavior reported for day i and person j, and the gratitude_day$_{ij}$ variable refers to the amount of gratitude reported for day i and person j. The β_{10} term is the day-level prosocial behavior slope, and β_{20} is the day-level gratitude slope.

Next, I tested interactions between prosocial behavior and gratitude for my third set of hypotheses by entering the prosocial behavior x gratitude interaction term into the model (equation 3) as represented in the following equation:

$$DV_{ij} = \beta_{00} + \beta_{10}(prosocial\_day_{ij}) + \beta_{20}(gratitude\_day_{ij}) + \beta_{30}(prosocial\_day_{ij}$$

$$\text{X } gratitude\_day_{ij}) + e_{ij} \qquad (4)$$

where the additional term, β_{30} (*prosocial_day$_{ij}$* X *gratitude_day$_{ij}$*), represents the interaction of an individual's daily levels of prosocial behavior and gratitude on the outcome variable, and the β_{30} term is the slope of the interaction between prosocial behavior and gratitude. Significant interaction effects were graphically depicted by plotting the simple slopes at one standard deviation above and below the mean.

The first set of analyses included the fixed and random effects of the daily (level 1) predictors (prosocial behavior and gratitude). If the random effects were not significant, they were taken out of the model leaving only the random intercept. The random effects of prosocial behavior were not significant in any of the analyses and were thus taken out of all models in which prosocial behavior was a predictor (models 1, 3, 4). The random effects of gratitude were significant only in the private self-absorption analyses and were included in models 2, 3, and 4

(only models with gratitude included as a predictor) and were removed from analyses for public self-absorption and hypersensitive narcissism.

Intraclass Correlation Coefficients

The Intraclass Correlations Coefficient (ICC) is a measure of the amount of variance in the outcome variable explained by within-person day-to-day variation and provides the percentage of the day-to-day variability for within-person versus between-person variability. To use multilevel modeling, there must be a significant amount of within-person variability. As the first step in my analyses, I calculated ICC's by running empty models (i.e., a single variable with both fixed and random intercepts), and then dividing the within-person variance by the sum of the between-person variance and the within-person variance from the estimates of covariance parameters table. There is debate about ICC cutoff values that warrant the use of MLM, and there were no strict guidelines to follow. However, when assessing the inter-rater reliability in reliability studies, both Fleiss (1986) and Portney and Watkins (2009) use ICC values around .75 to represent good to excellent convergence of scores across multiple raters. This means that an ICC below .75 contains a less than optimal amount of variance for their purposes (convergence of rater's scores). Thus, for our purposes, we could view an ICC of below .75 as having enough variance to use MLM for our analyses.

In the current sample, the ICC for prosocial behavior was .50, indicating that 50% of the variability was due to differences within the participants' own day-to-day prosocial behavior, and the other 50% was due to differences in reported prosocial behavior between participants. The ICC for gratitude was .43, and the ICC's for private self-absorption, public self-absorption, and hypersensitive narcissism were .52, .63, and .56, respectively.

Chapter 5: Results

Preliminary Findings

Across all participants ($N = 113$), the length of time in recovery ranged from 5 months to 39 years ($M = 7.50$ years, $SD = 9.14$); more than half the sample reported alcohol as their primary addiction (63.5% alcohol, 36.5% drugs). Participants attended an average of 3 AA meetings per week, ($M = 2.99$, $SD = 1.82$), and all but one participant had an AA sponsor. Most people were currently working the 12-steps with their sponsor (89%), and half the sample reported sponsoring other AA members (helping an AA member through the 12-steps; 52.2%). Among those who indicated that they sponsor others, the average current number of sponsees (people they help through the steps) was 1.5 ($SD = 1.71$).

Participant's length of time in recovery was significantly and negatively correlated with public self-absorption, $r(113) = -.26$, $p < .01$, but not private self-absorption or hypersensitive narcissism. This indicates that people with more time in recovery reported thinking less about what other people think of them compared to people with less time in recovery. It also means that all participants continued to think about themselves regardless of the amount of time in recovery. Length of time in recovery was also negatively correlated with psychological distress, $r(113) = -.26$, $p = .03$, and positively correlated with gratitude, $r(113) = .25$, $p < .01$, indicating that people with longer periods of sobriety experienced fewer symptoms of psychological distress and were more grateful.

Measuring AA Engagement with Prosocial Behavior and Meeting Attendance

To illustrate that prosocial behavior is indeed a better indicator of recovery than AA meeting attendance alone, I included a measure of recovery capital in the study for comparative purposes. As a reminder, recovery capital measures the participant's access to psychological, social, and environmental resources that are important for recovery. As expected, there was a positive and significant correlation between recovery capital and prosocial behavior in AA, $r(113) = .26$, $p < .01$, but the correlation between recovery capital and AA meeting attendance was not significant. The findings confirm that there is a stronger relationship between prosocial behavior and recovery than between AA meeting attendance and recovery, and validate the use of prosocial behavior in AA as a means of quantifying AA participation and engagement.

Further Evidence for Stable Trait Narcissism Over Time

As previously noted, a few researchers have investigated whether participating in Alcoholics Anonymous reduces different aspects of narcissism and found mixed results. One reported changes in sub-facets of narcissism over a short period of time (Goldman & Gelso, 1997); others found little to no change at all (Reinert, Allen, Fenzel, & Estadt, 1993; Reinert, Estadt, Fenzel, Gilroy, & Allen, 1994; Tonigan, Rynes, Toscova, & Hagler, 2013). As anticipated, in this sample no change occurred from baseline to day 7. The first measurement was slightly higher at baseline than on day 7 (3.0 vs. 2.83, respectively) but the difference between the two scores was not significant.

Primary Analyses

Zero-Order Correlations (Hypotheses 1a-h)

Descriptive statistics and correlations among key variables and all covariates are reported in Table 2. Mean scores were calculated across all 7 daily reports for each of the primary variables of interest (prosocial behavior, private self-absorption, public self-absorption, and hypersensitive narcissism) for the purpose of correlating weekly scores with baseline measurements.

I expected to find a significant positive correlation between prosocial behavior in AA and gratitude, and a significant negative correlation between prosocial behavior and private self-absorption, public self-absorption, and hypersensitive narcissism. Similarly, I expected that gratitude would be significantly and negatively correlated with private self-absorption, public self-absorption, and hypersensitive narcissism.

For my first hypothesis, 1a, daily prosocial behavior was indeed positively correlated with daily gratitude, $r(111) = .27$, $p < .01$; participants who engaged in more prosocial behavior reported feeling more grateful. Interestingly, daily prosocial behavior was not correlated with baseline measures of trait-level gratitude, suggesting that helping others in AA impacts state-level gratitude on a day-to-day basis regardless of a person's baseline level of gratitude.

Hypotheses 1b and c were not fully supported. Although prosocial behavior in AA was marginally correlated with private self-absorption, $r(111) = -.15$, $p = .10$, and hypersensitive narcissism, $r(111) = .17$, $p = .06$, the results did not reach significance. Generally speaking, participants who helped more people reported less private self-absorption as well as less hypersensitive narcissism, but not at a significant level.

Table 2.

Descriptive Statistics and Correlations Among Primary Variables and Covariates

	1	2	3	4	5	6	7	8	9	10	11	12
1 Prosocial Behavior	1											
2 Gratitude (Daily)	.27**	1										
3 Private Self-Absorption	-.15	-.35**	1									
4 Public Self-Absorption	-.16	-.36**	.72**	1								
5 HS Narcissism	-.17	-.47**	.76**	.78**	1							
6 Gender	-.01	.14	-.05	-.09	-.12	1						
7 Years Sober	.11	-.02	-.15	-.26**	-.18	-.13	1					
8 Gratitude (Trait)	.14	.44**	-.43**	-.53**	-.50**	.09	.25**	1				
9 Psychological Distress	-.09	-.36**	.43**	.47**	.54**	.16	-.21*	-.48**	1			
10 Social Desirability	.09	.23*	-.20*	-.23*	-.35**	.02	.17	.18	-.09	1		
11 Social Contact	.06	.09	-.12	.03	.07	.10	-.19*	.13	-.04	.01	1	
12 Negative Affect	-.03	-.38**	.49**	.44**	.50**	.05	-.16	-.34**	.45**	-.04	.10	1
M	3.48	4.01	1.94	1.98	2.17	—	7.63	6.08	0.42	0.39	8.75	1.78
SD	1.81	0.59	0.71	0.73	0.56	—	9.17	0.58	0.53	0.19	3.71	0.53

*Note. ** p < .01 (2-tailed); * p < .05 (2-tailed); gender coded as 0 = male, 1 = female*

With regard to hypotheses 1 d and e, as expected, gratitude was negatively correlated with private self-absorption, $r(111) = -.35$, $p < .01$, and hypersensitive narcissism, $r(111) = -.47$, $p < .01$, such that participants who reported feeling more grateful also reported significantly less private self-absorption and less hypersensitive narcissism.

Within-Person Daily Associations (Hypotheses 2a-c; 3a-c)

Private Self-Absorption. Results of person-centered multilevel models for private self-absorption are presented in Table 3. As expected, model 1 (testing hypothesis 2a) revealed that more prosocial behavior on a given day was associated with less private self-absorption on the same day. For every additional act of prosocial behavior that a participant engaged in each day above their own weekly average, they reported .05 less private self-absorption. Regarding gratitude in model 2 (testing hypothesis 2b), also as expected, higher levels of daily reported gratitude were associated with less private self-absorption; for every additional point in gratitude higher than their own weekly average, they reported .17 less private self-absorption. In model 3, the effects of both gratitude and prosocial behavior were significant, meaning that over and above the effects of each other, gratitude and prosocial behavior were associated with less private self-absorption.

In model 4 (testing hypothesis 2c), the interaction between prosocial behavior and daily gratitude was significant. Participants who reported more daily gratitude and engaged in more prosocial behavior reported the least amount of self-absorption. This finding was graphically depicted in Figure 8 by plotting the simple slopes at one standard deviation above and below the mean of the moderator (gratitude).

Table 3.

Summary of Multilevel Models Testing the Fixed and Random Effects of Prosocial Behavior and

Gratitude on Private Self-Absorption.

	Private Self-Absorption			
	Model 1	Model 2	Model 3	Model 4
	Est (SE)	*Est (SE)*	*Est (SE)*	*Est (SE)*
Fixed Effects				
Intercept	2.11 (.23)**	2.14 (.23)**	2.15 (.23)**	2.13 (.23)**
Prosocial Behavior	-.05 (.01)**		-.04 (.01)**	-.04 (.01)**
Gratitude		-.17 (.05)**	-.17 (.05)**	-.18 (.05)**
Prosocial X Gratitude				.09 (.03)**
Random Effects				
Intercept (ID) variance	.30**	.31**	.31**	.30**
Daily Gratitude	—	.09*	.07*	.07*
Model Fit Statistics				
AIC	1186.94	1177.22	1166.65	1161.63
BIC	1200.08	1199.17	1188.54	1183.52

Note. ** $p < .01$ (2-tailed); * $p < .05$ (2-tailed). *Gender, length of sobriety, extraversion, trait gratitude, social contact, psychological distress, and social desirability included as covariates.*
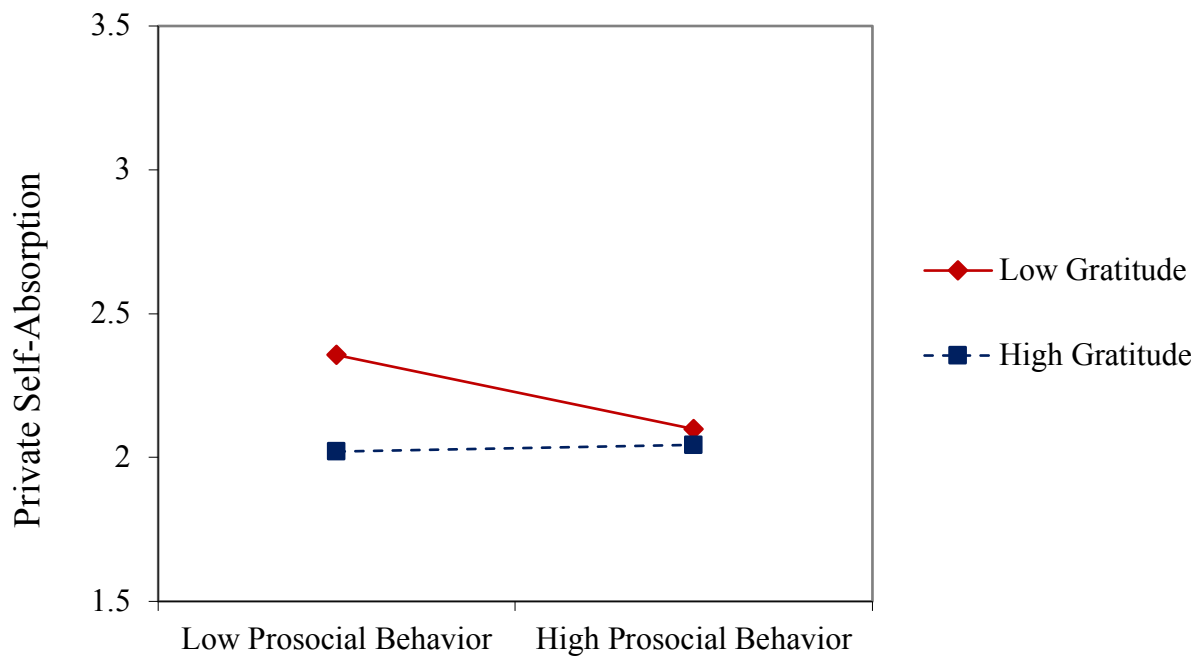
Figure 10. Associations between prosocial behavior, gratitude, and private self-absorption among people in Alcoholics Anonymous. Simple slopes are plotted at one standard deviation above and below the means of prosocial behavior and gratitude. $N = 113$

Although not presented in the results table, all models included seven covariates (i.e., gender, length of sobriety, baseline gratitude, psychological distress, social contact, social desirability, negative affect), which attests to the strength of the associations between prosocial behavior, gratitude, and private self-absorption over and above many other known correlates.

Public Self-Absorption. I made no specific hypotheses about public self-absorption (thinking about what *other* people think about the self). However, the results are presented in Table 4 to highlight interesting differences between private vs. public self-absorption. Model 1 revealed that prosocial behavior on a given day was *not* associated with public self-absorption on that same day. Model 2 indicated that gratitude was associated with public self-absorption on that same day: on days when participants reported one point higher than their weekly average for gratitude, they reported .11 less public self-absorption. In model 3, when the effects of both gratitude and prosocial behavior were estimated, gratitude was significantly associated with public self-absorption, with no change in estimate or level of significance from the previous model. In model 4, the interaction between prosocial behavior and daily gratitude was not significant.

Table 4.

Summary of Multilevel Models Testing the Fixed and Random Effects of Prosocial Behavior and Gratitude on Public Self Absorption.

	Public Self-Absorption			
	Model 1	Model 2	Model 3	Model 4
	Est (SE)	*Est (SE)*	*Est (SE)*	*Est (SE)*
Fixed Effects				
Intercept	2.31 (22)**	2.31 (22)**	2.31 (22)**	2.31 (22)**
Prosocial Behavior	-.01 (.01)		.00 (.01)	.00 (.01)
Gratitude		-.11 (.04)**	-.11 (.04)**	-.12 (.04)*
Prosocial X Gratitude				.02 (.02)
Random Effects				
Intercept (ID) variance	.26**	.27**	.26**	.26**
Model Fit Statistics				
AIC	1104.65	1102.03	1101.00	1105.94
BIC	1117.79	1115.20	1114.14	1119.07

*Note. ** p < .01 (2-tailed); * p < .05 (2-tailed. Gender, length of sobriety, extraversion, trait gratitude, social contact, psychological distress, and social desirability included as covariates.*

Hypersensitive Narcissism. Results of person-centered multilevel models for hypersensitive narcissism are presented in Table 5. As expected, model 1 (testing hypothesis 3a) revealed that prosocial behavior was associated with hypersensitive narcissism. People who engaged in one more act of prosocial behavior on a given day (compared to their own weekly average), reported .03 less hypersensitive narcissism on that day. In model 2 (testing hypothesis 3b), gratitude was significantly associated with hypersensitive narcissism. For each one-point increase in gratitude over the participants' own weekly average, they reported .10 less hypersensitive narcissism. In model 3, the effects of gratitude remained significantly associated with hypersensitive narcissism, and prosocial behavior was marginally significant, indicating that the effects of gratitude on hypersensitive narcissism were stronger than the effects of prosocial behavior. In model 4 (testing hypothesis 3c), the interaction between prosocial behavior and gratitude was only marginally significant but is depicted in Figure 9. Simple slopes analyses indicated the same pattern for hypersensitive narcissism as private self-absorption; people who reported less prosocial behavior and gratitude were the highest on hypersensitive narcissism. But again, the results were only marginally significant. As a reminder, all models included seven covariates (i.e., gender, length of sobriety, baseline gratitude, psychological distress, social contact, social desirability, negative affect), which are not presented in the results table.

Table 5.

Multilevel Models Testing the Fixed and Random Effects of Prosocial Behavior and Gratitude on

Hypersensitive Narcissism.

	Hypersensitive Narcissism			
	Model 1	Model 2	Model 3	Model 4
	Est (SE)	*Est (SE)*	*Est (SE)*	*Est (SE)*
Fixed Effects				
Intercept	2.58 (16)**	2.58 (16)**	2.58 (16)**	2.58 (16)**
Prosocial Behavior	-.02 (.01)*		-.02 (.01)[†]	-.02 (.01)[†]
Gratitude		-.10 (.03)**	-.10 (.03)**	-.10 (.03)**
Prosocial X Gratitude				.03 (.02)[†]
Random Effects				
Intercept (ID) variance	.12 (.02)**	.12 (.02)**	.11 (.02)**	.12 (.02)**
Model Fit Statistics				
AIC	844.11	842.29	840.13	843.19
BIC	857.25	855.46	853.26	856.32

Note. ** *p < .01 (2-tailed); * p < .05;* [†]*p < .10 (2-tailed). Gender, length of sobriety, extraversion, trait gratitude, social contact, psychological distress, and social desirability included as covariates.*
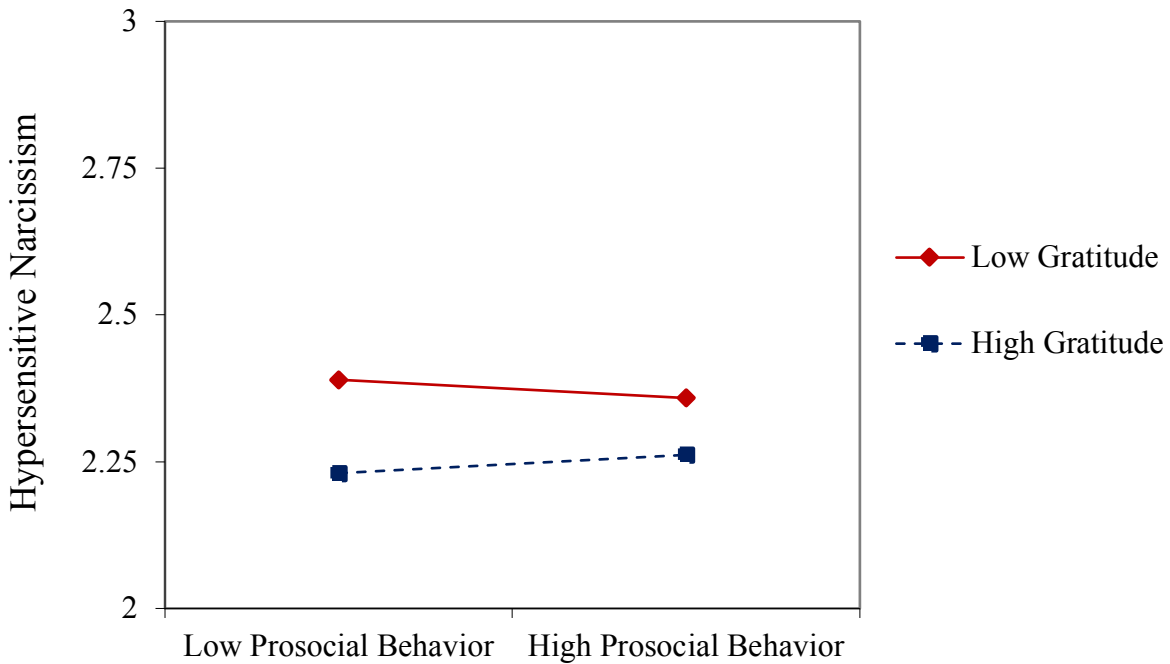
Figure 11. Associations between prosocial behavior, gratitude, and hypersensitive narcissism among people in Alcoholics Anonymous. Simple slopes are plotted at one standard deviation above and below the means of prosocial behavior and gratitude. $N = 113$.

Lastly, there was a significant effect of time for hypersensitive narcissism, such that over the course of the week, participants reported significantly less hypersensitive narcissism. This trend was not present for private or public self-absorption.

Post-Hoc Tests of Additional Moderators and Next-Day Lagged Analyses

After conducting my main analyses a few lingering questions remained. Specifically, is there a causal relationship between prosocial behavior, gratitude, and selfishness? And does gender, time in recovery, or sponsor status moderate the association between prosocial behavior

and selfishness? Thus, as a follow-up to my primary analyses, I conducted a series of additional analyses that examined these questions.

First, I conducted next-day lagged analyses to investigate whether more prosocial behavior on one day *predicted* lower selfishness on the next day. I created new time-lag variables for both prosocial behavior and gratitude that was the previous day's score and re-ran a new set of analyses that included the time-lagged independent variables. There were no significant spillover effects in any of the models when ran with or without the covariates. Meaning, yesterday's prosocial behavior or gratitude levels did not predict today's selfishness (private self-absorption or hypersensitive narcissism). This finding remained the same with or without including the control variables in the analyses.

Second, I explored gender, length of sobriety, and sponsor status (i.e., whether the participant was a sponsor to newer AA members or not) as moderators by running several new sets of analyses. In each set I included the variable in question, the interaction between the variable and gratitude, the interaction between the variable and prosocial behavior, and the 3-way interaction between the variable, gratitude, and prosocial behavior.

With regard to gender, the 3-way interaction was not significant for any of the outcomes, meaning that gender was not a significant moderator for private self-absorption or for hypersensitive narcissism. The moderating effect of gratitude on the association between prosocial behavior and self-absorption or hypersensitive narcissism did not differ for men versus women.

Next, I examined length of time in recovery by creating a new variable that split participants into 2 groups: "low" or "high" recovery, determined by the sample mean ($M = 7.63$ years; low $= < 7$ years; high $= > 7$ years). In the same manner as explained for gender above, I

then entered the new length of time in recovery variable into the models, along with the 2-way interactions with gratitude and prosocial behavior, and the 3-way interaction between all three variables. Similar to gender, the 3-way interaction was not significant, indicating no significant difference between people with low vs. high time in recovery. An examination of length of time in recovery as an additional moderator would ideally be done by making comparisons between people in early recovery (i.e., first year or two) and those with longer term recovery. However, this sample did not contain enough people in year 1 and 2 to make such comparisons ($n = 20$). In the future, more data will be collected to examine prosocial behavior, gratitude, and length of sobriety more closely, especially people in the first and second year of recovery.

Lastly, to examine whether the results differed among people who were a sponsor vs those who were not, I added 'sponsor status' to the analyses, along with the 2-way and 3-way interactions between prosocial behavior and gratitude. I discovered a significant 3-way interaction between sponsor status, prosocial behavior, and gratitude for hypersensitive narcissism ($p = .01$), but not for private self-absorption ($p = .21$). As a follow up, I ran the same analyses for public self-absorption and found a marginally significant 3-way interaction ($p = .06$). This finding suggests that sponsor status may be important for the *other-focused* element of selfishness (i.e., being overly concerned with what other people think about one's self), found in both hypersensitive narcissism and public self-absorption.

To further decompose these 2 significant 3-way interactions, I used the split file function in SPSS to create two groups within the data, people who sponsor vs. people who do not sponsor, and re-ran the same set of analyses. The results showed a significant 2-way interaction between prosocial behavior and gratitude for hypersensitive narcissism *among people who sponsor others*, but not for people who do not sponsor others. This finding indicates that sponsors

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reported significantly higher hypersensitive narcissism on days when they were low in gratitude and prosocial behavior. In other words, sponsors were more selfish on days when they helped other people less and felt less grateful. Further, the results were only significant for *other-focused* outcomes, suggesting that sponsors were more focused on what other people thought about them, as opposed to being preoccupied with their own cares, concerns, and desires.

Chapter 6: Discussion

Summary of Findings

My aim in conducting this research was to test the relationship between two important concepts found in 12-step recovery programs: Prosocial behavior in AA and selfishness (measured as private self-absorption and hypersensitive narcissism). Further, I aimed to assess the relationship between gratitude and selfishness and explore whether there is a stronger relationship when paired with prosocial behavior over and above the association of either variable alone. The idea that helping others (prosocial behavior) is an antidote to selfishness is presumed to be true among members of AA, and is eluded to in Alcoholics Anonymous literature, and yet has not been scientifically explored or validated. In this study, I employed longitudinal, daily diary methodology to investigate whether engaging in daily prosocial behavior toward others in AA and feeling more grateful is associated with lower selfishness over a period of 7 days in members of Alcoholics Anonymous.

In line with my hypotheses, I found that on days when participants helped more people in AA compared to their own weekly average, they reported significantly lower selfishness (i.e., private self-absorption, hypersensitive narcissism) than on days when they helped fewer people. This pattern was not present for public self-absorption (i.e., time spent thinking about what *other people* think about the self). Regarding gratitude, I found that on days when participants were more grateful compared to their own weekly average, they reported lower selfishness (i.e., private self-absorption, hypersensitive narcissism), and reported thinking less about what other

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people thought about them (public self-absorption) than on days when they were less grateful. Additionally, participants who felt more grateful reported lower selfishness regardless of their level of prosocial behavior on that day, which suggests that gratitude may have protective qualities against selfishness among AA members. It is yet unknown whether or not being more selfish is related to higher relapse rates. Further investigation of this line of inquiry has implications for public health and would help identify potential risk factors for relapse as well as highlight the benefits of gratitude within this population.

The results of this study provide empirical support for the benefit of helping other people get and stay sober, which is one of the founding principles of Alcoholics Anonymous. The findings also contribute to the mounting evidence for the powerful effects of gratitude documented extensively in the literature over the past several decades (Algoe & Haidt, 2009; Davis et al., 2016; Emmons & McCullough, 2003; Emmons & Mishra, 2011; Williams & Bartlett, 2015; Wood, Maltby, Gillett, Linley, & Joseph, 2007; Wood, Froh, & Geraghty, 2010; Wood, Joseph, & Maltby, 2008), and adds to the growing body of literature on the positive effects of gratitude for people in recovery (Krentzman et al., 2015; LaBelle & Edelstein, 2017).

I included numerous alternative explanatory variables in my analyses to understand the strength of the associations between key variables. The study sample size and repeated measures design allowed enough statistical power to control for the effects of other many known correlates that may have had a significant impact the outcome (gender, length of sobriety, extraversion, trait gratitude, social contact, psychological distress, and social desirability). Holding all control seven variables constant, prosocial behavior and gratitude were still significantly associated with private self-absorption and hypersensitive narcissism. Meaning, both prosocial behavior and gratitude (but especially gratitude) were associated with private self-absorption and

hypersensitive narcissism regardless of participants' age, gender, length of time in recovery, trait-level gratitude, daily social contact, psychological distress, and tendency to report in a favorable manner. Uncovering significant relationships between prosocial behavior, gratitude, private self-absorption, and hypersensitive narcissism despite the inclusion of these additional variables speaks to the strength of these associations.

Comparisons between the Current Sample and Previous Studies

Numerous previous studies indicate elevated narcissism scores in people with substance use disorder (Beveridge, 2008; Carter et al., 2012; Corbisiero & Reznikoff, 1991; Hart & Huggett, 2005; Kohut, 1977; Tonigan et al., 2013; van Schoor, 1992). However, with regard to hypersensitive narcissism, there were only slight mean-level differences in compared to college undergraduates. Across all 7 days, the mean for hypersensitive narcissism in the current sample was 2.17 (*SD* = .56), compared to 2.9 (*SD* not available) in the college student sample (Hendin & Cheek, 1997). The discrepancy between studies that have confirmed higher narcissism scores in this population and the current study's lack of findings may be a result of previous researcher's use of samples who were still in treatment or in the early stages of recovery compared to my sample, who were in longer term recovery (length of time in recovery ranged from 5 months to 39 years; *M* = 7.50 years, *SD* = 9.14). Future researchers may want to further investigate hypersensitive narcissism scores in people who are in early versus long-term recovery.

As anticipated, with regard to overall changes in trait-level narcissism, the findings of the current study replicate non-significant findings from other studies on the topic (Reinert et al., 1993; Reinert et al., 1994). Researchers previously attempted to find evidence that 12-step participation reduces pathological narcissism by comparing scores among people with short

versus long-term sobriety using a cross-sectional design (Reinert et al., 1993), and by utilizing longitudinal methods to examine mean-level changes in scores over time in a sample of people in recovery (Reinert et al., 1994). In both cases, the hypotheses were not supported, although slight decreases in pathological narcissism over time were found in the longitudinal study.

The lack of significant findings across previous studies is not surprising, given that narcissism is considered a relatively stable trait. The data in the current study revealed patterns similar to what was previously found: There was a slight decline in trait narcissism scores from baseline to day 7, but the difference between the two scores was not significant. Thus, it appears that although AA members may not necessarily experience permanent reductions in trait-level narcissism, the recovery process in AA may help people combat against state-level or temporary fluctuations in narcissism.

However, when looking at hypersensitive narcissism (as opposed to the larger construct of narcissism) over the course of the 7-day study period, there was a significant association with time such that as the week went on, participants reported less hypersensitive narcissism. Yet there were no significant associations between time and either of the other outcome variables, private or public self-absorption. This finding suggests the possibility of measurement error due to repeated testing over the course of the week. This topic under consideration for future research endeavors.

The data partially support claims found in AA literature about 'selfishness' being a common attribute among people with alcoholism. Self-absorption levels (both private and public) in the current sample slightly differed from the undergraduate sample in McKenzie and Hoyle (2008). The current sample's weekly mean for private self-absorption was somewhat elevated compared to undergraduate students (recovering sample = 1.96, students = 1.7).

However, public self-absorption scores were *lower* in my sample than in the college sample (recovering sample = 2.01, students = 2.50). These finding suggest that AA members may think about their own cares and concerns more than undergraduates but think less about what other people think of them compared to college undergraduates.

Evidence of Need for Continued Helping Behavior and Gratitude Practice in Recovery?

One of the ideas discussed at length in stories and articles written by AA members and published in The Grapevine (AA Journal) is that members "*can't stay sober today on yesterday's sobriety.*" This translates into the idea that actions taken on a given day are beneficial for recovery on that day only, and that each day new behavior geared toward promoting one's recovery must be repeated in order to maintain continuous sobriety (e.g., helping others, going to meetings, step work). This idea informed my hypotheses; I made predictions about associations between variables *on the same day* (i.e., is more prosocial behavior on day 1 related to lower selfishness on day 1).

Another way to examine the data is to explore causal relationships by looking at whether one variable predicts the other across 2 days (i.e., does day 1 prosocial behavior predict day 2 selfishness). Although I made no predictions about causal pathways, it is an important question and the research design allowed for exploration of this question. Thus, using the daily diary data, I explored whether more helping behavior *yesterday* predicted lower selfishness *today* by creating time-lag variables for the previous day's prosocial behavior and gratitude. I re-ran a new set of analyses for each outcome that included the time-lagged independent variables and found no significant spillover effects in any of the models, with or without the covariates. Meaning, *yesterday's* prosocial behavior or gratitude did not predict *today's* selfishness (private self-

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absorption or hypersensitive narcissism) for the participants, even when the control variables were removed from the analyses. When paired with the main results of the current study, this finding suggests that there may be some truth to the idea that each day new actions must be taken toward maintaining one's sobriety, rather than depending on actions from previous days.

Study Strengths and Future Directions

I acknowledge both strengths and limitations of this study. First, more than two-thirds of the sample were women in recovery. In the most recent membership survey of Alcoholics Anonymous in the United States and Canada (Alcoholics Anonymous World Services, 2014), only 38% of members were women; as a result, much of the existing research on people in recovery has been conducted primarily or exclusively on men, with little exploration into women in recovery. Thus, having a large number of women in the study can be considered a strength. However, while it is a strength to have a large proportion of women in the sample, it can also be a weakness—it does not represent the gender balance of the AA population and limits the generalizability of the results.

The sample consisted of people from all stages of recovery, as opposed to only those in the beginning stages, as was the case in two of the previous studies on similar topics. Further, the sample consisted of people who were active in the program of Alcoholics Anonymous (self-identified) and who had an AA sponsor. This can also be viewed as either a strength or a weakness; a strength based on the relatively small amount of existing research on people who are actively engaged in AA and are in long-term recovery, and a weakness based on the lack of people who are less engaged in AA, and who are in the beginning stages of recovery.

Although efforts were employed to recruit an ethnically diverse sample, the participants were primarily Caucasian (90%). This largely reflects the current racial composition of AA membership, in which 89% of members are White (Alcoholics Anonymous World Services, 2014). Future studies that include larger proportions of underrepresented AA members are needed to extend generalizability of the findings to a wider population.

Future researchers may want to test the associations uncovered in this study in a sample that does *not* consist of people in recovery to explore whether the effects of prosocial behavior and gratitude on selfishness generalize to other populations. This may be especially relevant for people who have a tendency toward being preoccupied with the self (e.g., people with depression, or who struggle with rumination, etc.) and could uncover potential solutions for helping to relieve their symptoms.

In this study I looked at same-day associations and post-hoc exploratory analyses of next-day predictive relationships between daily reported prosocial behavior, gratitude, and selfishness. Future researchers may want to employ experimental methods that manipulate prosocial behavior and/or gratitude and measure the effects on selfishness compared to a control group to establish causality. Another area of future exploration is to examine the relationship between selfishness and overall satisfaction with life or indicators of positive growth. It would be useful to know whether spending less time thinking about the self is related to general well-being among people in long-term recovery.

Chapter 7: Conclusion

Prosocial behavior and gratitude are undoubtedly vital components of the 12-step recovery program of Alcoholics Anonymous. The findings of this study indicate that they are related to focusing less on one's own self, which is an important aspect of recovery as discussed extensively in AA program literature. Between the two constructs, gratitude has a particularly strong association with less self-focus. This study adds to the growing body of literature on the importance of gratitude for people in recovery from alcoholism and substance use disorder. The findings of this study help us better understand why it is important for people in recovery to continue to participate in AA by helping others, practicing gratitude, and engaging in AA after they stop drinking, and provides insight into how people in recovery thrive.

Appendices

Appendix A: Study Overview
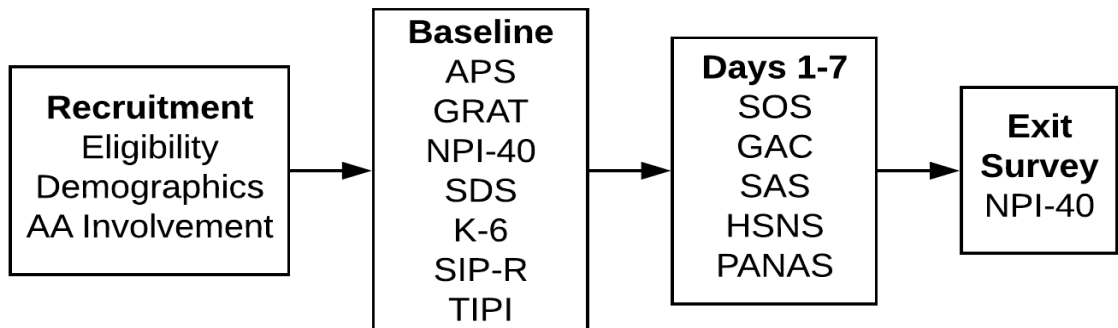
Key

APS = Altruistic Personality Scale

GRAT = Gratitude, Resentment, and Appreciation Test

NPI-40 = Narcissistic Personality Inventory

SDS = Social Desirability Scale

K-6 = Kessler Psychological Distress Scale

SIP-R = Short Inventory of Problems

TIPI = Ten-Item Personality Inventory

SOS = Service to Others in Sobriety Scale

GAC = Gratitude Adjectives Checklist

SAS = Self-Absorption Scale

HSNS = Hypersensitive Narcissism Scale

PANAS = Positive and Negative Affect Scale

Appendix B: Measures

Qualifying Questions

1. Are you a member of Alcoholics Anonymous?
2. Are you at least 18 years old?
3. Have you been sober at least 90 days?
4. Do you have a sponsor?
5. Do you consider yourself an active member of Alcoholics Anonymous?

Baseline Measures

Demographic Questionnaire

1. How old are you?
2. What is your gender?
3. What is your race/ethnicity?
4. What is the highest level of education you have attained?
5. What is your average annual income?
6. What is your relationship status?
7. In general, how would you rate your health?
8. Are you a student?
    a. How many classes are you taking?
9. Are you currently employed?
    a. On average, how many hours do you work per week?
10. What is your living situation?
11. Are you a caretaker? This includes children or adult relatives (mother, grandfather, etc.)
    a. Please estimate the number of hours per week that you spend caring for children/adult relatives.
12. What was your main addiction? (alcohol or drugs?)
13. Are you currently working the steps with a sponsor?
14. On average, how many meetings do you attend per week?
15. What is your sobriety date?
16. We ask that you create a participant ID so that we may link your daily surveys together. Please follow the directions listed below: Enter the first 2 letters of your first name, your birth year, the last 2 letters of your last name into the space below (e.g., RE1980ED)

Gratitude, Resentment, and Appreciation Test (GRAT)

Please provide your honest feelings and beliefs about the following statements which relate to you. There are no right or wrong answers to these statements. We would like to know how much you feel these statements are true or not true of you. Please try to indicate your true feelings and beliefs, as opposed to what you would like to believe. Respond to the following statements by circling the number that best represents your real feelings. Please use the scale provided below, and please choose one number for each statement (i.e. don't circle the space between two numbers), and record your choice in the blank preceding each statement.

1	2	3	4	5	6	7	8	9
I strongly disagree		I disagree somewhat		I feel neutral		I mostly agree		I strongly agree

_____ 1. I couldn't have gotten where I am today without the help of many people.

_____ 2. Life has been good to me.

_____ 3. There never seems to be enough to go around and I never seem to get my share.

_____ 4. Oftentimes I have been overwhelmed at the beauty of nature.

_____ 5. Although I think it's important to feel good about your accomplishments, I think that it's also important to remember how others have contributed to my accomplishments.

_____ 6. I really don't think that I've gotten all the good things that I deserve in life.

_____ 7. Every Fall I really enjoy watching the leaves change colors.

_____ 8. Although I'm basically in control of my life, I can't help but think about all those who have supported me and helped me along the way.

_____ 9. I think that it's important to "Stop and smell the roses."

_____ 10. More bad things have happened to me in my life than I deserve.

_____ 11. Because of what I've gone through in my life, I really feel like the world owes me something.

_____ 12. I think that it's important to pause often to "count my blessings."

_____ 13. I think it's important to enjoy the simple things in life.

_____ 14. I feel deeply appreciative for the things others have done for me in my life.

_____ 15. For some reason I don't seem to get the advantages that others get.

_____ 16. I think it's important to appreciate each day that you are alive.

Watkins, P. C., Woodward, K., Stone, T., & Kolts, R. L. (2003). Gratitude and happiness: Development of a measure of gratitude, and relationships with subjective well-being. *Social Behavior and Personality: An International Journal, 31*, 431-451.

Altruistic Personality Scale (APS)

Using the following scale, please select the category that conforms to the frequency with which you have carried out the following acts.

1	2	3	4	5
Never	Once	More than once	Often	Very Often

1. I have helped push a stranger's car that was broken down or out of gas.
2. I have given directions to a stranger.
3. I have made change for a stranger.
4. I have given money to a charity.
5. I have given money to a stranger who needed it (or asked me for it).
6. I have donated goods or clothes to a charity.
7. I have done volunteer work for a charity.
8. I have donated blood.
9. I have helped carry a stranger's belongings (books, parcels, etc.).
10. I have delayed an elevator and held the door open for a stranger.
11. I have allowed someone to go ahead of me in a lineup (in the supermarket, at a copy machine, at a fast-food restaurant).
12. I have given a stranger a lift in my car.
13. l have pointed out a clerk's error (in a bank, at the supermarket) in undercharging me for an item.
14. I have let a neighbor whom I didn't know too well borrow an item of some value to me (e.g., a dish, tools, etc.).
15. I have bought 'charity' holiday cards deliberately because I knew it was a good cause.
16. I have helped a classmate who I did not know that well with an assignment when my knowledge was greater than his or hers.
17. I have, before being asked, voluntarily looked after a neighbor's pets or children without being paid for it.
18. I have offered to help a handicapped or elderly stranger across a street.
19. I have offered my seat on a bus or train to a stranger who was standing.
20. I have helped an acquaintance to move households.

Scoring:
Score scale as a continuous measure. Higher scores indicate higher altruism

Rushton, J. P., Chrisjohn, R.D., & Fekken, G. C. (1981). The altruistic personality and the self-report altruism scale. *Personality and Individual Differences*, 1, 292-302

Narcissistic Personality Inventory 13 (NPI)

In each of the following pairs of attributes, choose the one that you most agree with. Mark your answer by writing either A or B in the space provided. Only mark one answer for each attitude pair.

_____ 1. A I find it easy to manipulate people.
     B I don't like it when I find myself manipulating people.
_____ 2. A When people compliment me I get embarrassed.
     B I know that I am a good person because everybody keeps telling me so.
_____ 3. A I like having authority over other people.
     B I don't mind following orders.
_____ 4. A I insist upon getting the respect that is due me.
     B I usually get the respect I deserve.
_____ 5. A I don't particularly like to show off my body.
     B I like to show off my body.
_____ 6. A I have a strong will to power.
     B Power for its own sake doesn't interest me.
_____ 7. A I expect a great deal from other people.
     B I like to do things for other people.
_____ 8. A My body is nothing special.
     B I like to look at my body.
_____ 9. A Being in authority doesn't mean much to me.
     B People always seem to recognize my authority.
_____ 10. A I will never be satisfied until I get all that I deserve.
     B I will take my satisfactions as they come.
_____ 11. A I try not to be a show off.
     B I will usually show off if I get the chance.
_____ 12. A I am a born leader.
     B Leadership is a quality that takes a long time to develop.
_____ 13. A I like to look at myself in the mirror.
     B I am not particularly interested in looking at myself in the mirror.

NPI-13 Scoring Instructions
If items are entered into the dataset as A=1 and B=2, recode all items such that A=0 and B=1.
Reverse score items #1, 3, 4, 6, 7, 10, 12, and 13, such that A=1 and B=0.
To get the total score, sum 1R, 2, 3R, 4R, 5, 6R, 7R, 8, 9, 10R, 11, 12R, and 13R.

Gentile, B., Miller, J. D., Hoffman, B. J., Reidy, D. E., Zeichner, A., & Campbell, W. K. (2013).
     A test of two brief measures of grandiose narcissism: The Narcissistic Personality
     Inventory–13 and the Narcissistic Personality Inventory-16. *Psychological Assessment,*
     25(4), 1120-1136.

Marlow Crowne Social Desirability Scale (SDS)

Listed below are a number of statements concerning personal attitudes and traits. Please decide whether the statement is (mostly) true or (mostly) false as it pertains to you. Answer "True" to positively stated items if they are true as often or more often than stated; for example, if you often fight with your friends, answer "True" to the item "I occasionally fight with my friends"

1. I'm always willing to admit it when I make a mistake.
2. I always try to practice what I preach.
3. I never resent being asked to return a favor.
4. I have never been irked when people expressed ideas very different from my own.
5. I have never deliberately said something that hurt someone's feelings.
6. I like to gossip at times.
7. There have been occasions when I took advantage of someone.
8. I sometimes try to get even rather than forgive and forget
9. At times I have really insisted on having things done my own way.
10. There have been occasions when I felt like smashing things.

Scores are coded as 0 = false and 1 = true. Higher scores indicate higher need for social desirability.

Strahan, R., & Gerbasi, K. C. (1972). Short, homogeneous versions of the Marlow-Crowne Social Desirability Scale. *Journal of Clinical Psychology*, *28*(2), 191-193.

Kessler Psychological Distress Scale (K-6)

During the last 30 days, about how often did. . .*

Depressed Mood
(d) . . . you feel so depressed that nothing could cheer you up? (6)
(e) . . . you feel hopeless? (6)
(e) . . . you feel hopeless? (10)

Motor Agitation
(a) . . . you feel restless or fidgety? (6)
(b) . . . you feel so restless that you could not sit still? (10)

Fatigue
(b) . . . you feel that everything was an effort? (6)
(b) . . . you feel that everything was an effort? (10)

Worthless guilt
(a) . . . you feel worthless? (6)
Anxiety
(b) . . . you feel nervous? (6)
(c) . . . you feel so nervous that nothing could calm you down? (10)

* The response options used a 5-item scale: all of the time, most of the time, some of the time, a little of the time, and none of the time.

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L. T., . . . Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*(6), 959-976. doi:10.1017/S0033291702006074

Short Inventory of Problems – Revised

Participants are instructed to indicate how often each of the listed consequences has occurred during the past 3 months ("never," "once or a few times," "once or twice a week," "daily or almost daily"; scored 0–3). Item responses are summed to produce a total score and five subscale scores.

1. I have been unhappy because of my drinking or drug use. (INTRA)
2. Because of my drinking or drug use, I have lost weight or not eaten properly. (PHYS)
3. I have failed to do what is expected of me because of my drinking or drug use. (SOC)
4. I have felt guilty or ashamed because of my drinking or drug use. (INTRA)
5. I have taken foolish risks when I have been drinking or using drugs. (IMP)
6. When drinking or using drugs, I have done impulsive things that I regretted later. (IMP)
7. Drinking or using one drug has caused me to use other drugs more. (IMP)
8. I have gotten into trouble because of drinking or drug use. (SOC)
9. The quality of my work has suffered because of my drinking or drug use. (SOC)
10. My physical health has been harmed by my drinking or drug use. (PHYS)
11. I have had money problems because of my drinking or drug use. (SOC)
12. My physical appearance has been harmed by my drinking or drug use. (PHYS)
13. My family has been hurt by my drinking or drug use. (INTER)
14. A friendship or close relationship has been damaged by my drinking or drug use. (INTER)
15. My drinking or drug use has gotten in the way of my growth as a person. (INTRA)
16. My drinking or drug use has damaged my social life, popularity, or reputation. (INTER)
17. I have spent too much or lost a lot of money because of my drinking or drug use. (SOC)

Note. IMP = Impulse control (5, 6, 7); INTER = Interpersonal (13, 14, 16); INTRA = Intrapersonal (1, 4, 15); PHYS = Physical (2, 10, 12); SOC = Social (3, 8, 9, 11, 17).
* Not incorporated in prior versions.

Kiluk, B. D., Dreifuss, J. A., Weiss, R. D., Morgenstern, J., & Carroll, K. M. (2013). The Short Inventory of Problems–Revised (SIP-R): Psychometric properties within a large, diverse sample of substance use disorder treatment seekers. *Psychology of addictive behaviors, 27*(1), 307-314.

Ten-Item Personality Inventory-(TIPI)

Here are a number of personality traits that may or may not apply to you. Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement. You should rate the extent to which the pair of traits applies to you, even if one characteristic applies more strongly than the other.

Disagree strongly	Disagree moderately	Disagree a little	Neither agree nor disagree	Agree a little	Agree moderately	Agree strongly
1	2	3	4	5	6	7

I see myself as:

1. _____ Extraverted, enthusiastic.
2. _____ Critical, quarrelsome.
3. _____ Dependable, self-disciplined.
4. _____ Anxious, easily upset.
5. _____ Open to new experiences, complex.
6. _____ Reserved, quiet.
7. _____ Sympathetic, warm.
8. _____ Disorganized, careless.
9. _____ Calm, emotionally stable.
10. _____ Conventional, uncreative.

TIPI scale scoring ("R" denotes reverse-scored items):
Extraversion: 1, 6R; Agreeableness: 2R, 7; Conscientiousness; 3, 8R; Emotional Stability: 4R, 9; Openness to Experiences: 5, 10R.

Gosling, S. D., Rentfrow, P. J., & Swann Jr, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality, 37*(6), 504-528. doi:10.1016/S0092-6566(03)00046-1

Daily Report Measures

Service to Others in Sobriety Scale (SOS)

Please rate the following items on a scale from 1 to 5.
If the item does not apply to you, please give a response of 1 (never) to the question.

How often in the past month did you…	**1=never, 2=rarely, 3=sometimes, 4=often, 5=always**

1. Take calls or spent time with a sponsee?   _____

2. Guide an alcoholic/addict through the 12-Steps?   _____

3. Hold a service position in a 12-Step program?   _____

4. Say something positive to an alcoholic/addict?   _____

5. Listen to an alcoholic/addict?   _____

6. Say hello to a newcomer?   _____

7. Reach out to an alcoholic/addict having a hard time?   _____

8. Share a personal story with an alcoholic/addict?   _____

9. Read program literature to an alcoholic/addict?   _____

10. Encourage an alcoholic/addict to go to a meeting?   _____

11. Donate money to AA/NA?   _____

12. Put away chairs after a meeting?   _____

The 12-item SOS utilizes a 5-point Likert-type rating scale with anchors ranging from 1 = rarely to 5 = always with reference to the prior month.

Pagano, M., Krentzman, A., Onder, C., Baryak, J., Murphy, J., Zywiak, W., & Stout, R. (2010). Service to others in sobriety (SOS). *Alcoholism Treatment Quarterly, 28*(2), 111-127. doi: 10.1080/07347321003656425

Gratitude Adjectives Checklist

Items:

Grateful

Thankful

Appreciative

The 3 items of the measure were rated on a 5-point scale ranging from 1 = very slightly or not at all to 5 = extremely. Daily gratitude score was the mean score across all three adjectives.

Emmons, Robert A., & McCullough, Michael E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology, 84*(2), 377-389. doi: 10.1037/0022-3514.84.2.377

Self-Absorption Scale (SAS)

Private self-absorption
1. I think about myself more than anything else.
2. When I try to think of something other than myself, I cannot.
3. When I have to perform a task, I do not do it as well as I should because my concentration is interrupted with thoughts of myself instead of the task.
4. My mind never focuses on things other than myself for very long.
5. I cannot stop my head from thinking thoughts about myself.
6. Sometimes I am so deep in thought about my life I am not aware of my surroundings.
7. I do not spend long amounts of time thinking about myself.*
8. When I think about my life, I keep thinking about it so long I cannot turn my attention to tasks that need to be done.

Public self-absorption
9. I find myself wondering what others think of me even when I don't want to.
10. I have difficulty focusing on what others are talking about because I wonder what they're thinking of me.
11. I feel like others are constantly evaluating me when I'm with them.
12. I wish others weren't as critical of me as they are.
13. I am very aware of what others think of me, and it bothers me.
14. When I start thinking about how others view me, I get all worked up.
15. It upsets me when people I meet don't like me.
16. When I'm about to meet someone for the first time, I worry about whether they'll like me.
17. After being around other people, I think about what I should have done differently when I was with them.

*Reverse scored item.

Self-Absorption Scale items are rated on 5-point (1 = not at all like me to 5 = very much like me). Scales were scored by calculating a mean score for each subscale.

McKenzie, K., & Hoyle, R. (2008). The Self-Absorption Scale: Reliability and validity in non-clinical samples. *Personality and Individual Differences, 45*(8), 726-731. doi: 10.1016/j.paid.2008.07.020

Hypersensitive Narcissism Scale (HSNS)

Items
1. I can become entirely absorbed in thinking about my personal affairs, my health, my cares or my relations to others.
2. My feelings are easily hurt by ridicule or by the slighting remarks of others.
3. When I enter a room I often become self-conscious and feel that the eyes of others are upon me.
4. I dislike sharing the credit of an achievement with others.
5. I dislike being with a group unless I know that I am appreciated by at least one of those present.
6. I feel that I am temperamentally different from most people.
7. I often interpret the remarks of others in a personal way.
8. I easily become wrapped up in my own interests and forget the existence of others.
9. I feel that I have enough on my hands without worrying about other people's troubles.
10. I am secretly ''put out'' when other people come to me with their troubles, asking me for my time and sympathy.
11. I talk a good deal about myself, my experiences, my feelings and my ideas.
12. I have great faith in my own ideas and my own initiative.

The Hypersensitive Narcissism Scale utilizes a response format of 1 to 5 (1 = "very uncharacteristic or untrue; strongly disagree;" 5 = "very characteristic or true; strongly agree"). Items are summed to create a total score; in this study I calculated a mean score.

Hendin, Holly M., & Cheek, Jonathan M. (1997). Assessing hypersensitive narcissism: A reexamination of Murray's Narcissism Scale. *Journal of Research in Personality, 31*(4), 588-599. doi: 10.1006/jrpe.1997.2204

Positive and Negative Affect Schedule (PANAS)-10

Positive Affect
Excited
Enthusiastic
Alert
Inspired
Determined

Negative Affect
Distressed
Upset
Scared
Nervous
Afraid

Rated on a 5-point scale:
1=Very slightly or not at all
2=A little
3=Moderately
4=Quite a bit
5=Extremely

Mean scores are calculated for each subscale.

Watson, D., Clark, L., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, Vol 54(6), 1063-1070. doi: 10.1037/0022-3514.54.6.1063

References

Albright, J. J., & Marinova, D. M. (2015). Estimating multilevel models using SPSS, STATA, SAS and R.

Alcoholics Anonymous World Services. (2014). Aa membership survey. In. New York, NY.

Alcoholics Anonymous World Services Inc. (1940-2010). Aa grapevine: The international journal of alcoholics anonymous digital archive. Retrieved June 5, 2016 http://da.aagrapevine.org/?q=da

Alcoholics Anonymous World Services Inc. (2001). *Alcoholics anonymous: The story of how many thousands of men and women recovered from alcoholism* (4 ed.). New York, NY.

Algoe, S. B. (2012). Find, remind, and bind: The functions of gratitude in everyday relationships. *Social and Personality Psychology Compass, 6*(6), 455-469. doi:10.1111/j.1751-9004.2012.00439.x

Algoe, S. B., & Haidt, J. (2009). Witnessing excellence in action: The "other-praising" emotions of elevation, gratitude, and admiration. *The Journal of Positive Psychology, 4*(2), 105-127.

Bartlett, M., & DeSteno, D. (2006). Gratitude and prosocial behavior: Helping when it costs you. *Psychological Science, 17*(4), 319-325. doi:10.1111/j.1467-9280.2006.01705.x

Beveridge, J. (2008). The self-psychology of addiction and its treatment. Narcissus in wonderland. *Psychodynamic Practice, 14*(4), 486-490. doi:10.1080/14753630802379267

Carter, R. R., Johnson, S. M., Exline, J. J., Post, S. G., & Pagano, M. E. (2012). Addiction and "generation me": Narcissistic and prosocial behaviors of adolescents with substance dependency disorder in comparison to normative adolescents. *Alcoholism Treatment Quarterly, 30*(2), 163-178.

Caspi, A., & Roberts, B. W. (1999). Personality continuity and change across the life course. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research (2nd ed.).* (pp. 300-326). New York, NY US: Guilford Press.

Clark, P. C. (2013). *The effects of multicollinearity in multilevel models.* Wright State University,

Corbisiero, J. R., & Reznikoff, M. (1991). The relationship between personality type and style of alcohol use. *Journal of Clinical Psychology, 47*(2), 291-298.

Crape, B. L., Latkin, C. A., Laris, A. S., & Knowlton, A. R. (2002). The effects of sponsorship in 12-step treatment of injection drug users. *Drug and Alcohol Dependence, 65*(3), 291-301.

Davis, D. E., Choe, E., Meyers, J., Wade, N., Varjas, K., Gifford, A., . . . Griffin, B. J. (2016). Thankful for the little things: A meta-analysis of gratitude interventions. *Journal of Counseling Psychology, 63*(1), 20-31.

Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology, 84*(2), 377-389.

Emmons, R. A., & McCullough, M. E. (2004). *The psychology of gratitude.* New York, NY: Oxford University Press.

Emmons, R. A., & Mishra, A. (2011). Why gratitude enhances well-being: What we know, what we need to know. In K. M. Sheldon, T. B. Kashdan, & M. F. Steger (Eds.), *Designing positive psychology: Taking stock and moving forward.* (pp. 248-262). New York, NY: Oxford University Press.

Farwell, L., & Wohlwend-Lloyd, R. (1998). Narcissistic processes: Optimistic expectations, favorable self-evaluations, and self-enhancing attributions. *Journal of Personality, 66*(1), 65-83.

Fleiss, J. L. (1986). *The design and analysis of clinical experiments.* New York, NY: Wiley.

Gentile, B., Miller, J. D., Hoffman, B. J., Reidy, D. E., Zeichner, A., & Campbell, W. K. (2013). A test of two brief measures of grandiose narcissism: The narcissistic personality inventory−13 and the narcissistic personality inventory-16. *Psychological Assessment, 25*(4), 1120-1136.

Giacomin, M., & Jordan, C. H. (2014). Down-regulating narcissistic tendencies communal focus reduces state narcissism. *Personality and Social Psychology Bulletin, 40*(4), 488-500.

Giacomin, M., & Jordan, C. H. (2016). Self-focused and feeling fine: Assessing state narcissism and its relation to well-being. *Journal of Research in Personality, 63*, 12-21.

Goldman, G. F., & Gelso, C. J. (1997). Kohut's theory of narcissism and adolescent drug abuse treatment. *Psychoanalytic Psychology, 14*(1), 81-94.

Gosling, S. D., Rentfrow, P. J., & Swann Jr, W. B. (2003). A very brief measure of the big-five personality domains. *Journal of Research in Personality, 37*(6), 504-528. doi:10.1016/S0092-6566(03)00046-1

Hart, K. E., & Huggett, C. (2005). Narcissism. *Alcoholism Treatment Quarterly, 23*(4), 85-100. doi:10.1300/J020v23n04_06

Hendin, H. M., & Cheek, J. M. (1997). Assessing hypersensitive narcissism: A reexamination of murray's narcism scale. *Journal of Research in Personality, 31*, 588-599. doi:10.1006/jrpe.1997.2204

Hoffmann, H., & Jackson, D. N. (1974). Differential personality inventory for male and female alcoholics. *Psychological Reports, 34*(1), 21-22.

Hull, J. G. (1981). A self-awareness model of the causes and effects of alcohol consumption. *Journal of Abnormal Psychology, 90*(6), 586-600.

Jordan, C. H., Giacomin, M., & Kopp, L. (2014). Let go of your (inflated) ego: Caring more about others reduces narcissistic tendencies. *Social and Personality Psychology Compass, 8*(9), 511-523.

Kaskutas, L. A. (2009). Alcoholics anonymous effectiveness: Faith meets science. *Journal of Addictive Diseases, 28*(2), 145-157.

Kelly, Magill, M., & Stout, R. L. (2009). How do people recover from alcohol dependence? A systematic review of the research on mechanisms of behavior change in alcoholics anonymous. *Addiction Research & Theory, 17*(3), 236-259.

Kelly, J. F. (2013). Alcoholics anonymous science update: Introduction to the special issue. *Substance Abuse, 34*(1), 1-3. doi:10.1080/08897077.2012.691447

Kelly, J. F. (2017). Is alcoholics anonymous religious, spiritual, neither? Findings from 25 years of mechanisms of behavior change research. *Addiction, 112*(6), 929-936.

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L. T., . . . Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*(6), 959-976. doi:10.1017/S0033291702006074

Kiluk, B. D., Dreifuss, J. A., Weiss, R. D., Morgenstern, J., & Carroll, K. M. (2013). The short inventory of problems–revised (sip-r): Psychometric properties within a large, diverse sample of substance use disorder treatment seekers. *Psychology of Addictive Behaviors, 27*(1), 307-314.

Kohut. (1971). The analysis of the self In. New York, NY: University Press.

Kohut, H. (1977). *Preface to psychodynamics of drug dependence*. Washington, DC: Government Printing Office.

Krentzman, A. R., Mannella, K. A., Hassett, A. L., Barnett, N. P., Cranford, J. A., Brower, K. J., . . . Meyer, P. S. (2015). Feasibility, acceptability, and impact of a web-based gratitude exercise among individuals in outpatient treatment for alcohol use disorder. *The Journal of Positive Psychology*(6), 477-488.

LaBelle, O. P., & Edelstein, R. S. (2017). Gratitude, insecure attachment, and positive outcomes among 12-step recovery program participants. *Addiction Research & Theory*, 1-10. doi:10.1080/16066359.2017.1333111

Levin, J. (1987). *Treatment of alcoholism and other addictions*. Northvale, NJ: Jason Aronson, Inc.

Levin, J. (1991). When the patient abuses alcohol. In H. Jackson (Ed.), *Using self psychology in psychotherapy* (pp. 203-222). Northvale, NJ: Jason Aronson, Inc.

Maas, C. J., & Hox, J. J. (2005). Sufficient sample sizes for multilevel modeling. *Methodology, 1*(3), 86-92.

Magura, S., McKean, J., Kosten, S., & Tonigan, J. S. (2013). A novel application of propensity score matching to estimate alcoholics anonymous' effect on drinking outcomes. *Drug and Alcohol Dependence, 129*(1), 54-59.

McCullough, M. E., Emmons, R. A., & Tsang, J. A. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology, 82*(1), 112-127.

McCullough, M. E., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B. (2001). Is gratitude a moral affect? *Psychological Bulletin, 127*(2), 249-266.

McKenzie, K. S., & Hoyle, R. H. (2008). The self-absorption scale: Reliability and validity in non-clinical samples. *Personality and Individual Differences, 45*(8), 726-731.

National Institute on Drug Abuse. (2005). *Drug abuse and addiction: One of america's most challenging public health problems*. National Institutes of Health Retrieved from https://archives.drugabuse.gov/about/welcome/aboutdrugabuse/magnitude.

Nezlek, J. B. (2012). Multilevel modeling for psychologists. *APA handbook of research methods in psychology, 3*, 219-241.

Pagano, M., Friend, K. B., Tonigan, J. S., & Stout, R. L. (2004). Helping other alcoholics in alcoholics anonymous and drinking outcomes: Findings from project match. *Journal of Studies on Alcohol, 65*(6), 766.

Pagano, M., Zeltner, B., Post, S., Jaber, J., Zywiak, W., & Stout, R. (2009). Who should I help to stay sober?: Helping behaviors among alcoholics who maintain long-term sobriety. *Alcoholism Treatment Quarterly, 27*(1), 38-50.

Pagano, M. E., Krentzman, A. R., Onder, C. C., Baryak, J. L., Murphy, J. L., Zywiak, W. H., & Stout, R. L. (2010). Service to others in sobriety (sos). *Alcoholism Treatment Quarterly, 28*(2), 111-127.

Pagano, M. E., White, W. L., Kelly, J. F., Stout, R. L., & Tonigan, J. S. (2013). The 10-year course of alcoholics anonymous participation and long-term outcomes: A follow-up study of outpatient subjects in project match. *Substance Abuse, 34*(1), 51-59.

Portney, L. G., & Watkins, M. P. (2009). *Foundations of clinical research: Applications to practice* (3 ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Raskin, R., & Terry, H. (1988). A principal-components analysis of the narcissistic personality inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology, 54*(5), 890-902.

Raskin, R. N., & Hall, C. S. (1979). A narcissistic personality inventory. *Psychological Reports, 42*, 590.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (Vol. 1): Sage.

Reinert, D. F., Allen, J. P., Fenzel, L. M., & Estadt, B. K. (1993). Alcohol recovery in self-help groups: Surrender and narcissism. *Journal of Religion and Health, 32*(4), 299-308.

Reinert, D. F., Estadt, B., Fenzel, L. M., Gilroy, F. D., & Allen, J. P. (1994). Relationship of surrender and narcissism to involvement in alcohol recovery. *Alcoholism Treatment Quarterly, 12*(1), 49-58.

Room, R. (1993). Alcoholics anonymous as a social movement. In Barbara S. McCrady & W. R. Miller (Eds.), *Research on alcoholics anonymous: Opportunities and alternatives.* (pp. 167-187). New Brunswick, NJ: Rutgers Center of Alcohol Studies.

Rushton, J. P., Chrisjohn, R. D., & Fekken, G. C. (1981). The altruistic personality and the self-report altruism scale. *Personality and Individual Differences, 2*(4), 293-302.

Solom, R., Watkins, P. C., McCurrach, D., & Scheibe, D. (2016). Thieves of thankfulness: Traits that inhibit gratitude. *The Journal of Positive Psychology*, 1-10.

Strahan, R., & Gerbasi, K. C. (1972). Short, homogeneous versions of the marlowe-crowne social desirability scale. *Journal of Clinical Psychology*.

Substance Abuse and Mental Health Services Administration. (2016). *Recovery: The many paths to wellness*. Retrieved from Washington, DC: https://www-ncbi-nlm-nih-gov.proxy.lib.umich.edu/books/NBK424857/pdf/Bookshelf_NBK424857.pdf

Tonigan, J. S., Rynes, K., Toscova, R., & Hagler, K. (2013). Do changes in selfishness explain 12-step benefit? A prospective lagged analysis. *Substance Abuse, 34*(1), 13-19. doi:10.1080/08897077.2012.691453

Twenge, J. M., Konrath, S. H., Foster, J. D., Campbell, W. K., & Bushman, B. J. (2008). Egos inflating over time: A cross-temporal meta-analysis of the narcissistic personality

inventory. *Journal of Personality, 76*(4), 875-902. doi:10.1111/j.1467-6494.2008.00507.x

van Schoor, E. (1992). Pathological narcissism and addiction: A self-psychology perspective. *Psychoanalytic Psychotherapy, 6*(3), 205-212. doi:10.1080/02668739200700191

Vilsaint, C. L., Kelly, J. F., Bergman, B. G., Groshkova, T., Best, D., & White, W. (2017). Development and validation of a brief assessment of recovery capital (barc-10) for alcohol and drug use disorder. *Drug & Alcohol Dependence, 177*, 71-76.

Watkins, P. C., Woodward, K., Stone, T., & Kolts, R. L. (2003). Gratitude and happiness: Development of a measure of gratitude, and relationships with subjective well-being. *Social Behavior and Personality: An International Journal, 31*(5), 431-451.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The panas scales. *Journal of Personality and Social Psychology, 54*(6), 1063-1070.

Wetzel, E., Leckelt, M., Gerlach, T. M., & Back, M. D. (2016). Distinguishing subgroups of narcissists with latent class analysis. *European Journal of Personality, 30*(4), 374-389.

White, W. (2008). Recovery capital: A primer for addictions professionals. *Counselor, 9*(5), 22-27.

Williams, L. A., & Bartlett, M. Y. (2015). Warm thanks: Gratitude expression facilitates social affiliation in new relationships via perceived warmth. *Emotion, 15*(1), 1.

Wilson, B. (1953). *Twelve steps and twelve traditions* (1st Ed.). New York, NY: Alcoholics Anonymous World Services.

Wood, A., Maltby, J., Gillett, R., Linley, P., & Joseph, S. (2007). The role of gratitude in the development of social support, stress, and depression: Two longitudinal studies. *Journal of Research in Personality, 42*, 854-871.

Wood, A. M., Froh, J. J., & Geraghty, A. A. (2010). Gratitude and well-being: A review and theoretical integration. *Clinical Psychology Review, 30*(7), 890-905. doi:doi:10.1016/j.cpr.2010.03.005

Wood, A. M., Joseph, S., & Maltby, J. (2008). Gratitude uniquely predicts satisfaction with life: Incremental validity above the domains and facets of the five factor model. *Personality and Individual Differences, 45*(1), 49-54.

Zemore, S. E., Kaskutas, L. A., & Ammon, L. N. (2004). In 12-step groups, helping helps the helper. *Addiction, 99*(8), 1015-1023.