

**Psychological and interpersonal distress among patients with substance use disorders: Are these factors associated with continued drug use and do they change during treatment?**

4100 Hovedoppgave

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## Forord

Denne hovedoppgaven er skrevet i artikkelform og skal etter innlevering prøves for publisering. Publiseringen vil skje med undertegnede som hovedforfatter og Trond Nordfjærn og Roger Hagen som henholdsvis 2. og 3.forfatter.

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*Også Joachim Nielsen da:*

Det kan fort bli veldig langt å gå  
når du ikke har no' mål  
Og det kan lett bli jævla hardt  
å tigge når du ikke har trua på  
At alle ting skal ordne seg  
det er et lys i enden  
hvis du finner ut hvor bryter'n er  
og åssen du skrur'n på

*-Ingen har skylda – Jocke med Tourettes*

*Anette Hassel  
Trondheim, Desember, 2011*

## Abstract

This study aimed to test whether self-efficacy, interpersonal problems and psychological distress are significantly associated with substance use and if the factors associated with substance use are the same factors that are subject to change in treatment for patients with substance use disorders. The sample consisted of 346 respondents, sampled from 16 treatment facilities for substance use disorder treatment in Norway. Self-efficacy, interpersonal problems (sum score and sub scales) and psychological distress (sum scale and sub scales) were significantly associated with substance use. The results suggest a gap between factors associated with substance use problems and factors that are subject to change in treatment.

## Introduction

Treatment of substance use disorders (SUD) became a part of the Norwegian specialized health service allocated under the regional health care enterprises in 2004. This entailed a new demand for a thorough diagnostic process and effective treatment for this group of patients (Skutle, Hellandsjø, Løvaas, Schillinger, Møller, & van de Glind, 2011). In 2007, the Norwegian Ministry of Health and Care Services also launched a strategy plan to improve treatment for SUDs. Central to this strategy was the need to enhance the quality of the treatment offered to clients with SUDs.

Although several treatment approaches with empirically documented effect have been implemented in the field of treatment of SUDs, the majority of patients relapse during the first year after treatment (Miller, Walters, & Bennett, 2001). Treatment for SUDs in Europe has high dropout rates, and relapse rates for illicit drug use vary from 30% to 90%, while patients with alcohol problems have relapse rates that vary from 9 to 44%, depending on the treatment setting (Bühringer, Gossop, Türk, Wanigaratne, & Kaplan, 2001). Many researchers and clinicians claim that patients with substance use problems receive outdated interventions and treatment ideologies (Lossius, 2011). In addition, it is still unknown what type of changes that take place in patients receiving effective treatment for SUDs (Litt, Kadden, & Stephens, 2005). There is therefore a continuing need to improve the efficacy for treatment of SUDs and to empirically demonstrate such efficacy. Witkiewitz & Marlatt (2005) called for taking a few steps backward in order to gain a better understanding of the basic processes underlying outcomes of SUD treatment. The authors questioned the justification of large and expensive trials on treatment of SUDs, without having a thorough grasp of the individual differences, systemic relapse processes and the individual dynamics of treatment failure, as well as the protective factors predictive of treatment success.

There is a range of potential important psychological factors associated with substance use. The present study focuses on self-efficacy, interpersonal problems and psychological distress, as previous research has suggested these to be particularly relevant for this patient group (e.g. Marlatt, & Witkiewitz, 2005).

*Self-efficacy* is defined as the degree to which an individual feels confident and capable of performing a certain behavior in a specific situational context (Bandura, 1977). In the SUD treatment literature, the concept of self-efficacy refers to an individual's confidence in his/her ability to abstain from the use of substances in high-risk situations, decrease substance use and maintain abstinence (Annis, & Davis, 1991; Marlatt, & Donovan, 2005; Marlatt, & Gordon, 1985; Rawson, Obert, McCann, & Marinelli-Casey, 1993). Low levels of self-efficacy are found to be predictors of heavy drinking and marijuana use during and following treatment, while higher levels of self-efficacy are positively related to the percentage of days abstinent. (Connors, Maisto, & Zywiak, 1996; Stephens, Wertz, & Roffmann, 1993; Witkiewitz, 2011). Self-efficacy ratings explain unique variation in outcome after controlling for demographic and socioeconomic factors, psychological distress, contact with other users and coping variables (Stephens, Wertz, & Roffmann, 1993). Reilly, Sees, Shopshire, Hall, & Delucchi (1995) also found self-efficacy to be promising for understanding and decreasing illicit opioid drug use during long-term methadone detoxification treatment. Still, the authors found that efficacy expectations do not act as a primary mediator in the behavior change pathway. It merely works in parallel with other precursors (Reilly et al, 1995). This could be an indication that self-efficacy in its own right may not be as important a predictor as suggested by theory. Self-efficacy ratings could also have negative implications for the treatment process. Bandura described the "confident incompetent," an overinflated sense of self-efficacy (DiClemente, 2006), where self-efficacy could serve as a predictor of continued substance use. In a study on self-efficacy and illegal

substance use, subjects with lower self-efficacy were found to be using substances less often than subjects with high levels of self-efficacy (Bühringer et al, 2001). Many SUD treatments are based on a cognitive-behavioral relapse prevention model, with the goal of enhancing self-efficacy in order to forestall relapse (Litt et al, 2005). Since empirical research findings are not in agreement regarding the importance of self-efficacy, it may be preliminary to emphasize this concept in treatment.

*Interpersonal problems* have been found to be a particularly common and potent stressor in alcohol abuse (Bolger, DeLongis, Kessler, & Schilling, 1989). As early as in 1978, James Intagliata demonstrated the effectiveness of implementing interpersonal skills training in patient samples with SUDs. Compared to normal controls, the patients reported significant deficiencies in interpersonal problem-solving skills (see also Mueller, Degen, Petijean, Wiesbeck, & Walter, 2009 for further evidence). These results suggest that interpersonal problems-solving skills deficiencies may be amenable to positive change (Intagliata, 1978). To the authors' knowledge, there have been relatively few studies focused on the area of interpersonal problems related to predictors of continued drug use and relapse since this initial research. Still, interpersonal skills are taught in cognitive behavioral treatment for alcohol problems, including enhancing social support networks and general social skills, such as communication and assertiveness training (Marlatt, & Donovan, 2005).

The few research findings related to interpersonal problems and substance use indicate that the relationship between interpersonal factors and treatment outcomes is far from straightforward (Witkiewitz, & Marlatt, 2005). Early research by Marlatt (1985) indicated that *intrapersonal* determinants may be more commonly linked to harmful levels of substance use and relapse than *interpersonal* determinants. McCrady (2004), who have devoted her career to studying interpersonal factors in the treatment of substance abuse used the terms *complex* (five times) and *dynamic* (twice) to describe the relationship between interpersonal problems

and alcohol abuse. She concluded that the relationship between interpersonal functioning and SUD treatment is complex. Therefore, there is a need for more research on the role of interpersonal relationships and problems in treatment of SUDs.

*Psychological distress* is very common in SUDs. According to Kessler (2004), the majority of substance abusers seeking treatment have comorbid psychiatric disorders, usually affective-, anxiety-, psychotic- or personality disorders (Rosenthal, & Westreich, 1999). For example, a total of 91 % of a sample of Norwegian patients with SUDs were diagnosed with psychiatric disorders during their lifetime and over 60% met the criteria for three or more psychiatric diagnoses (Landheim, Bakken, & Vaglum, 2006). As the cited studies indicate, SUDs often exist in conjunction with psychiatric disorders and comorbidity between SUDs and other psychiatric disorders can be seen as the rule rather than the exception (Cottler, Phelps, Abdallah, & Spitznagel, 2003; McLellan et al, 1983). Findings suggest that this patient group tends to seek professional treatment more frequently, has a poorer prognosis of abstinence, shows higher relapse and treatment dropout rates, and requires additional treatment approaches (Festinger, Rubenstein, Marlowe, & Platt, 2001; McLellan et al, 1983; Sinha, & Schottenfeld, 2001). This suggests the need for intensive and continuous treatment of such disorders in order to improve long-term outcome (Toneatto, Negrete, & Calderwood, 2003). Although many studies have been carried out related to the association between SUDs and psychiatric problems, the importance of psychiatric disorder in the long term course of SUDs is still unclear, (Landheim et al, 2006) and further research on the association between psychiatric distress and SUDs is warranted.

Based on the cited studies, psychological distress, interpersonal problems and self-efficacy could be important predictors of SUDs. There has been relatively little research on predictors for harmful substance use for people diagnosed with SUDs in the Norwegian population (Landheim et al, 2006). In order to develop and implement the best treatment

approaches possible and to decrease the relapse and dropout rates in this patient population, topics related to the variables discussed above are important to research further.

The aim of the current study was to explore how psychological distress, interpersonal problems and self-efficacy are associated with illegal substance use and alcohol use. The study also aimed to explore whether the factors which are related to substance use change during the course of treatment. The results may yield an indication of whether the factors that are associated with substance and alcohol use are addressed accordingly in treatment.

## Methods

### *Sample*

The sample was recruited from sixteen treatment facilities for SUDs in Norway. Fifteen of the facilities were located in different counties in the central region of the country, while one facility was situated in the urban south-eastern region of Norway. Three of the facilities were outpatient clinics, while the remaining twelve units were inpatient treatment facilities. One of the treatment facilities included an opioid maintenance treatment program. The recruited facilities cover a variety of treatment approaches for patients with SUDs in Norway. The sample was recruited from March 2008 to August 2009. The patients were approached and recruited by research coordinators during their first two months of treatment (n=133) or their last two months of treatment (n=83). In addition to patients in treatment, patients on waiting list for treatment (n=63), and patients who had completed their treatment during the last 3-12 months (n=67) were recruited using postal questionnaires. The response rate for the part of the data collection that included inpatients was 53% (n=216), whereas the response rate for the patients recruited by mailed questionnaires was 28 % (n=130). The final sample in the study consisted of a total of 346 respondents.



### *Sample characteristics*

The final sample consisted of a majority of males (67.3%) and the mean age was 37.6 years, with a range of age from 19 to 77 years. A total of 63.6 % of the participants were either single, separated, divorced or widow/widower, while the remaining 36.4% were either in a relationship, married or in a partnership. The majority, 46%, had high school as their highest completed education. 1.7 % had not completed primary school, while 37% had primary school as their highest level of education. In regards to higher education, 11.8 % had university/college as their highest completed level of education. The majority of patients reported that alcohol (36.4%) was the substance they used the most. Other common main substances were cannabis (8.7%), heroin/opiates (13%) and amphetamine (18%). A majority of the patients reported using several substances. 50% of the participants reported having received a psychiatric diagnosis during their lifetime. Finally, 78.6 % of the participants had problematic levels of illicit substance use, and 67.3 % of the participants had problematic levels of alcohol use, measured by cut off scores on DAST-20 and AUDIT (measurements further described below). The sample characteristics generally resemble those in the relevant target patient population in Norway (Iversen, Lauritzen, Skretting, & Skutle., 2008).

### *Measures*

The questionnaires included validated instruments measuring illicit substance use, alcohol consumption, psychological distress, interpersonal problems and self-efficacy. In addition, additional test batteries not included in the current study, were also comprised in the questionnaire.

Information about severity levels of illicit substance use was measured by the Drug Abuse Screening Test (DAST-20) (Skinner, 1982). This inventory consists of 20 items measuring severity of illicit substance use, excluding alcohol, during the last month. The

DAST-20 is scored from 0-20. Test-retest reliability for the DAST-20 has been found to be good (.78) and measures of validity has also been found satisfactory (Yudko, Lozhkina, & Fauts, 2007).

Level of alcohol consumption was measured by the Alcohol Use Disorders Identification Test (AUDIT) (Saunders, Aasland, Babor, De La Fuente, & Grant, 1993). This inventory consists of 10 items enquiring about alcohol consumption during the last month. The AUDIT is scored from 0 - 40 (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). The AUDIT has a test-retest reliability of .88, and the internal consistency for all items varies from .38 to .69. The instrument is found to be a reliable and valid self-administered instrument to identify alcohol dependent individuals (Daeppen, Yersin, Landry, Pécoud, & Decrey, 2000).

Psychological distress was measured using the multidimensional Symptom Checklist-90-Revised (SCL-90-R) (Derogatis, 1983). The SCL-90-R consists of 90 items, measuring psychiatric symptoms experienced during the last week. The subscales include Somatization, Difficulties Concentrating, Vulnerability, Depression, Anxiety, Rage, Phobic Anxiety, Suspiciousness and Psychoticism, In addition to these subscales, the SCL-90-R also offers a global score of symptom severity. Responses are given on a 5-point Likert scale from not at all to very much. The SCL-90-R has reported a good internal consistency, with cronbach alpha ranging from .77 to .90, while the test-retest correlation ranges from .68 to .80 in different studies (Holi, 2003). There is strong support for its validity as a measure of general symptom severity and changes in symptom severity, but less support for its suggested dimensionality (Holi, 2003).

Interpersonal problems were measured by a Norwegian translation of the Circumplex of Interpersonal Problems (CIP) (Pedersen, 2002). CIP consists of a total of 48 items which are divided into two sub scales. The first sub scale, grouped as agency, contains 27 items, measuring social behaviors that respondents find difficult to carry out. Examples of questions

include: “it is difficult for me to participate in groups” and “it is difficult for me to say no to other people.” The second sub scale, grouped as communion, includes 21 items, relating to social acts the respondents carry out too often. Examples of questions from this section include “I argue too much with other people,” and “I tell other people too many personal things.” All statements on the CIP are scored on a 5-point Likert Scale from not at all to very much. The CIP also includes a total index score for interpersonal problems. Pedersen (2002) revealed feasible psychometric properties of the Norwegian adjustment of the instrument.

Self-efficacy was measured using the General Perceived Self-Efficacy Scale (GSE) (Schwartz, & Jerusalem, 1995). The GSE measures the confidence respondents have in their coping abilities toward stressors. Examples of questions included in the GSE are “I can solve most problems if I invest the necessary effort” and “I can handle whatever comes my way.” The GSE consists of 10 items, which are also scored on a 5-point Likert scale from not at all to very much. The GSE is found to have internal consistency of  $\alpha=.87$  (Scholz, Gutiérrez Doza, Sud, & Schwartz, 2002) in addition to a high reliability, stability, and construct validity (Leganger, Kraft, & Røysamb, 2000).

### *Ethical considerations*

The study was approved by the Regional Committee for Medical Research Ethics in Central Norway and the Norwegian Social Science Data Services before the data collection commenced. The patients received both oral and written information about the aims of the study, methods for data collection and analyses, as well as information about confidentiality and anonymity. The patients also received information about their right to withdraw from the study at any time. Patients’ completion of the questionnaire served as a full consent for participation.

### *Statistical analyses*

All analyses were undertaken using the statistical tool SPSS statistics 19.0. Descriptive statistics were used to examine the sample characteristics. A bivariate correlation analysis was used to find how illicit substance use and alcohol use correlated with GSE, CIP and SCL-90-R, respectively. The four strongest correlations for alcohol use, and five (five instead of four, as two of them were equally correlated) strongest correlations for illicit drug use, were further tested using a hierarchical multiple regression analysis, in order to test how much each variable predict both illicit drug use and alcohol use. The variables used in the bivariate correlation analysis were also measured using a one way between groups analysis of variance (ANOVA), with post-hoc Tukey and, for the analyses that violated the rule of homogeneity, - post hoc Games-Howell. The ANOVA analysis was undertaken in order to explore if there were significant differences between the four groups of respondents related to scores on the variables SCL-90-R, GSE and CIP, depending on how far along in treatment the patients had progressed. Differences indicate increases or decreases in the variables tested during a period of treatment. Effect sizes for differences on all the variables between treatment start and treatment end were also calculated.

## Results

In order to explore which variables that were associated with continued substance use, a bivariate correlation analysis was conducted between the total score on the DAST-20 and AUDIT and the following variables: CIP (sum score and sub scales), SCL-90-R (sum score and sub scales) and the GSE sum score. As reported in table 1, all the correlations between illicit drug use and the variables related to CIP, SCL-90-R and GSE were significant. The strongest correlation was found between illicit drug use and the total score on SCL-90-R, with a correlation coefficient of .41. The variables that were significantly correlated with alcohol

use were the total score of GSE, the global score of CIP and its two sub scales Agency and Communion, the global SCL-90-R -score, and the subscales on SCL-90-R named Somatization, Difficulty concentrating, Depression, Anxiety and Phobic anxiety. For a closer look, see table 1.

Insert table 1 here

Based on the results from the bivariate correlation analysis, a multiple linear regression analysis was used to test the predictive power of the five strongest correlations for illicit drug use, after controlling for the influence of sex and age. As seen in table 2, age and sex were entered in step 1, explaining 9.3% of the variance in illegal drug use. After entering the global score for SCL-90-R in step 2, the total variance explained was 21.8%,  $F_{(3,274)}=25,50, p<.001$ . The following sub scales of SCL-90-R: Concentration, Depression, Rage and Suspiciousness, were entered in step 3. The total variance explained by the model as a whole was 23.3%,  $F_{(7,270)}=11,70$ , but this was not statistically significant. None of the subscales, except Rage ( $\beta=-.15$ ) make unique significant contributions to the prediction of illicit drug use in this study. Age has a unique significant contribution to illicit drug use of  $\beta=-.23$ . The global score for psychological distress has a unique significant contribution to illicit drug use of  $\beta=.36$ .

Insert table 2 here

A Multiple linear regression analysis was also used to test the predictive power of the four strongest correlations to alcohol use. The outcome of this analysis is reported in table 3. In the linear regression for predictors of alcohol use, age and sex were entered in step 1,

explaining 8.1% of the variance in alcohol use. After entry of the SCL-90-R sum score in step 2, the total variance explained was 14.9%,  $F_{(3,274)}=15,96$ ,  $p<.001$ . The model as a whole, including Somatization, Anxiety and Depression, explains 15%,  $F_{(6,271)}=7,96$ ,  $p<.001$  of the variance. The model as a whole has no significant predictive power. Age has a unique significant contribution to levels of alcohol use of  $\beta=.33$ . The global score for SCL-90-R has a unique significant contribution to alcohol use of  $\beta=.30$  in step 2. The subscales for SCL-90-R make no unique significant contribution to the prediction of alcohol use.

Insert table 3 here

Finally, a one way between groups analysis of variance (ANOVA) was conducted to explore if there were changes between the total score and sub scales of SCL-90-R, the total score and sub scales of CIP and the total score of GSE at the different time points of treatment. The ANOVA was carried out using post-hoc Tukey and post-hoc Games-Howell. These were conducted to investigate the specific groups which differed significantly from each other while controlling for type 1-error inflation.

As shown in table 4, the ANOVA analysis found a significant main-effect of GSE ( $F_{(3,324)}=10,29$ ,  $p <0.01$ ), SCL-90-R sum score ( $F_{(3,279)}=13,39$ ,  $p<0.01$ ), the sub scores Somatization ( $F_{(3,319)}=14,18$ ,  $p<0.01$ ), Difficulty concentrating ( $F_{(3,320)}=13,24$ ,  $p<0.01$ ), Vulnerability ( $F_{(3,325)}=6,64$ ,  $p <0.01$ ), Psychoticism ( $F_{(3,329)}=5,62$ ,  $p<0.01$ ), Suspiciousness ( $F_{(3,330)}=8,35$ ,  $p<0.01$ ), Phobic anxiety, ( $F_{(3,326)}=8,04$ ,  $p<0.01$ ), Anxiety ( $F_{(3,318)}=10,25$ ,  $p<0.01$ ), Depression ( $F_{(3,319)}=16,83$ ,  $p<0.01$ ) and Rage ( $F_{(3,328)}=2,87$ ,  $p<0.05$ ), global score on CIP ( $F_{(3,285)}=2,71$ ,  $p<0.05$ ) and its sub scale Agency ( $F_{(3,309)}=2,75$ ,  $p<0.05$ ) for the four groups.

All of the ANOVA analyses except Difficulty concentrating, and CIP, sum score and sub scales, violated the homogeneity of variance. For the variables that violated the homogeneity of variance, a post-hoc comparison using the Games-Howell was used.

Insert table 4 here

Despite reaching statistical significance, the actual difference in mean scores was quite small. All variables, except the SCL-90-R sub scale Rage and the CIP sub scale Communion showed significant differences on multiple comparisons using either the Games-Howell post hoc test or the Tukey post-hoc-test. As seen in figure 1, the effect sizes for differences between treatment start and treatment end, indicated that none of the variables reached effect size above .27.

Insert figure 1 here

## Discussion

This study aimed to test if psychological distress, interpersonal problems and self-efficacy are factors associated with SUDs. Further, the study explored whether the factors associated with substance use also were subject to change during the course of treatment. The main findings from this study indicate that psychological and interpersonal problems are indeed associated with SUDs. Further the study indicates that the factors related to substance use, not necessarily are the same variables that are subjected to change in treatment.

Self-efficacy was significantly associated with substance use, but the role of self-efficacy still is still unclear, as the results from the current study indicate small associations between this construct and both alcohol use and illicit substance use. These results are in

agreement with those of Reilly and colleagues (1995), where self-efficacy was found to be associated with substance use, but did not appear to act as a primary mediator. This is an indication that self-efficacy is not as important a predictor as suggested by theory. However, the results from the current study also indicate that self-efficacy is a variable given an important focus in treatment, as the levels of self-efficacy undergo significant change during treatment. Caution is warranted regarding these findings as the design of this study did not allow consideration of temporal changes. This may have contributed to the weak associations between self-efficacy and substance use. Self-efficacy is a personal characteristic that changes over time (Bandura, 1977). Therefore, the relationship between self-efficacy and SUDs may be most appropriately considered in models that consider temporal changes (Tate et al, 2008) as dynamic measures of self-efficacy are stronger predictors of substance use than static measures (Shiffman et al, 2000).

There also seems to be a gap between the association between interpersonal problems and substance use and its probable focus for treatment, as indicated by the current study. Although there was a significant association between interpersonal problems and substance use, the current study indicates a lacking focus on interpersonal problems in treatment, as indicated by the post hoc analyses in the ANOVA. Interpersonal problems seem to be factors that are either not focused on in treatment, or problems that are not easily changed in a treatment setting. As mentioned, there is not much research on the topic of interpersonal problems related to SUDs (e.g. Marlatt, 1985b), and the limited research may well influence the lacking focus on the topic in treatment. Interpersonal skills are, however, taught in cognitive behavioral treatment for SUDs. This is a well-known and established treatment approach (Marlatt, & Donovan, 2005), and if this method is used, one should see changes in levels of interpersonal problems during treatment. The relationship between substance abuse and interpersonal problems is complex, though, and hence difficult to measure (McCrary,



2004; Witkiewitz, & Marlatt, 2005). This may have interfered with the findings in the current study. The findings entails the need for more research on the topic, and a more thorough understanding as to how interpersonal problems may affect the patients' level of substance use and whether the issue is addressed accordingly in treatment.

Research has indicated an important relationship between psychological distress and SUDs (e.g. Landheim et al, 2006). Findings from the current study adds support to these findings, as there are significant associations between the current measure of psychological distress and both illegal substance use and alcohol use. The results indicate an especially important association between both rage and depressive symptomatology and substance use. Still, the sum of psychological distress is more strongly associated with substance use than the unique symptomatology. This finding is in accordance with previous research from Norwegian SUD samples, where over 60% meet the criteria for several psychiatric diagnoses (Landheim et al, 2006).

One of the sub scales on the SCL-90-R, Rage, deserves attention, as the results suggested an important association between Rage and SUDs. Despite the strong association between substance use and rage, there is no indication of change in this variable during treatment. The finding of rage as an important variable is somewhat surprising, as there has been little research covered in the literature regarding the association between rage and SUDs. Anger is found to be a common antecedent to drinking, however (Marlatt, & Donovan, 2005) and the concept of Rage is related to the more common concept of anger. Rage may also be associated with antisocial or borderline personality disorder, as research predicts a strong association between substance abuse and personality disorders (Brooner, King, Kidorf, Schmidt, & Bigelow, 1997).

When looking at relations to SUDs as a whole, the current study indicates that self-efficacy, interpersonal problems and psychological distress is only part of the picture, as the

relations between the respectable variables and substance use are modest. As Landheim et al (2006) reported, the importance of psychological and interpersonal problems in relation to SUDs is still unclear. The variables tested in the current study may be influenced by each other and hence difficult to measure in a proper way (Stanton, 2005). The results may also be confounded by variables being interrelated and dependent upon other variables, such as demographic factors (Nordfjærn, 2010) and emotional states (Witkiewitz, 2011). Witkiewitz (2011) found that proximal risk factors, such as craving, mood and stress, may lead to continued substance use. These proximal factors are associated with distal risk factors, such as self-efficacy and psychological distress, however. Hence, psychological distress, self-efficacy and interpersonal factors do impact the overall system of substance abuse, although this influence is difficult to measure.

Several potential limitations of this study deserve comment. Firstly, the study used a cross-sectional design, and a longitudinal study may have yielded different results. Still, the respondents in the different groups are sampled from the same treatment facilities, and there is no reason to expect differences in the respectable groups. Secondly, the response rate for the patients on waiting list and patients who had completed treatment was below 30% and the response rate for the remaining participants was 53%. Nordfjærn (2010) compared the characteristics of the present sample with characteristics of 37 197 patients with SUDs. This analysis showed few differences between the present sample and the relevant patient target population, indicating that the sample is representative for the SUD patient population. Further, the measure of self-efficacy used in this study, GSE, may have a weakness in that it does not measure temporal changes in self-efficacy. In addition, it is a general measure of self-efficacy, not directly related to SUDs. However, patients with suds are subject to a range of non-substance specific situational demands and cues which could facilitate substance use. Hence, global self-efficacy could be a relevant construct for substance use (Oei, Hasking, &

Phillips, 2007). Moreover, the measure of illicit substance use, DAST-20, clusters different types of substance use. It may be that different types of substance use and abuse, such as amphetamine use and opiate use, have different psychological and interpersonal profiles. However, several studies (Greene, Adyanthaya, Morse, & Davis Jr, 1993; Mueser, Drake, & Wallach, 1998) challenged the Khantzian et al. (1974) version of the self-medication hypothesis which argued that patients with specific psychological disorders use specific substances. The clinical validity of this assumption is also reduced by the fact that the majority of patients with SUDs are poly-substance users. The high prevalence of poly-substance users also makes it difficult to separate different types of substance use profiles. Finally, the current study clustered informants with both alcohol and illicit drug use problems in the ANOVA analysis. If separate ANOVA analyses were to be run for illicit drug use and alcohol use, it may have resulted in stronger results, as alcohol disorders and other drug dependence disorders may have different treatment focuses. However, this would also have increased the probability of type I error inflation.

Despite the limitations listed, this study provides empirical support to the assumption that treatment for SUDs is somewhat out of synchrony, in regards to the variables related to continued substance use. The findings from the current study provide some answers to the large drop out and relapse-rates in treatment of SUDs. Despite reaching statistical significance, the mean differences between time points in the ANOVA analysis are small and calculating the effect sizes for differences between treatment start and treatment end, further supports the notion of small changes during treatment for the variables related to continued substance use. As reported, there is a discrepancy between the variables related to substance use and the variables subject to change in treatment. The concept of rage probably plays a larger role in SUDs than earlier research suggests, and it is an important variable that is probably being overlooked in treatment. This concept is likely to deserve a larger place in

treatment than given today. Further research regarding anger and rage in relation to SUDs is warranted. Future treatment protocols and research should also consider the role of interpersonal problems more thoroughly, as results from the current study indicate both that interpersonal problems are important aspects of continued substance use, and that these problems are not adequately addressed in treatment. Further, effective treatment for SUDs probably needs to further consider psychological distress, such as the role of depression and rage. The results indicate an appropriate focus on psychological distress in treatment of SUDs. Still, there seems to be a stronger focus on unique symptoms than the overall psychological distress, although the latter is more strongly related to substance use. Finally, many substance dependence treatment programs are based on a cognitive-behavioral relapse prevention model, focusing on increasing levels of self-efficacy. As both the literature cited and the current findings are ambiguous regarding the importance of self-efficacy in regards to SUDs, the emphasis on this concept may be overstated and there is a continued need for research on the subject.

With this study, we are taking a few steps backwards in order to gain a better understanding of the basic processes underlying treatment outcomes. A more thorough focus on the underlying variables related to substance use disorders in the Norwegian population is warranted in order to implement effective treatment approaches for this patient group, as results from the current study exemplifies a gap between factors associated with substance use problems and the factors that are subject to change in treatment. A better understanding of which factors to focus on in treatment for SUD patients, would hopefully result in lower relapse and dropout rates in this patient group.

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Table 1 *Correlation coefficients for illicit drug use and alcohol use*

Variables	Illicit Drug Use (N=346)	Alcohol Use(N=346)
GSE (n=328)	-.11*	-.18**
CIP global (n=289)	.22*	.18**
CIP – Agency (n=313)	.18**	.15**
CIP– communion (n=311)	.26**	.19**
SCL-90-R- Global (n=283)	.41*	.21**
Somatization (n=345)	.35**	.21**
Concentration (n=324)	.38**	.17**
Vulnerability (n=329)	.31**	.02
Depression (n=323)	.38**	.22*
Anxiety (n=322)	.36**	.20**
Rage (n=332)	.39**	.61
Phobic Anxiety (n=330)	.36**	.17**
Suspiciousness (n=334)	.39**	.08
Psychotism (n=333)	.31**	.08

\* = correlation is significant at the .05 level.

\*\*= correlation is significant at the .01 level.

Table 2 *Multiple regression for illicit drug use*

Model		$\beta$	Std. Error	Beta	R <sup>2</sup>
1	(Constant)	6.39	1.34		.09
	Sex	.72	.64	.07	
	Age	-.13	.02	-.31**	
2	(Constant)	.49	1.53		.22
	Sex	.23	.60	.02	
	Age	-.10	.02	-.23**	
	SCL-90-R Global	2.89	.44	.36**	
3	(Constant)	-.45	1.6		.51
	Sex	.36	.60	.03	
	Age	-.09	.03	-.21**	
	SCL-90-R Global	.19	1.92	.02	
	Concentration	.22	.73	.04	
	Depression	1.02	1.01	.16	
	Rage	1.24	.63	.15*	
	Suspiciousness	.54	.75	.07	

Dependent Variable:DAST-20

\* = significant at the  $p > .05$  level.

\*\*= significant at the  $p > .01$  level.

Table 3 *Multiple linear regression for alcohol use*

Model		$\beta$	Std. Error	Beta	R <sup>2</sup>
1	(Constant)	-4.62	2.76		.08
	Age	.22	.050	.25**	
	Sex	2.19	1.32	.10	
2	(Constant)	-13.55	3.29		.15
	Age	.27	.05	.32**	
	Sex	1.43	1.28	.06	
	SCL-90-R global	4.37	.93	.30**	
3	(Constant)	-13.09	3.51		.15
	Age	.28	.05	.31**	
	Sex	1.47	1.29	.07	
	SCL-90-R global	2.17	5.02	.14	
	Somatization	.12	1.59	.01	
	Depression	.59	2.26	.05	
	Anxiety	1.12	2.03	.09	

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Dependent variable: AUDIT

\*\*= sig at the >.01 level.

Table 4 ANOVA table for differences between groups in different steps of treatment

Between groups	<i>Sum of Squares</i>	<i>Degree of Freedom</i>	<i>Mean Square</i>	<i>F-ratio</i>	<i>p- value</i>
SCL90-R-global	14.43	3	4.81	13.40	.000
Somatization	20.6	3	6.87	14.18	.000
Anxiety	19.80	3	6.60	10.25	.000
Phobic Anxiety	12.13	3	4.04	8.04	.000
Suspiciousness	11.55	3	3.85	8.35	.000
Psychoticism	5.02	3	1.68	5.62	.001
Depression	28.73	3	9.58	16.83	.000
Rage	3.08	3	1.03	2.87	.037
Concentration	22.90	3	7.63	13.24	.000
Vulnerability	12.86	3	4.29	6.64	.000
CIP- global	2.60	3	.868	2.71	.045
CIP-Agency	4.00	3	1.333	2.75	.043
CIP-Communion	2.08	3	.69	2.52	.058
GSE	1445,70	3	481,90	10,29	.000

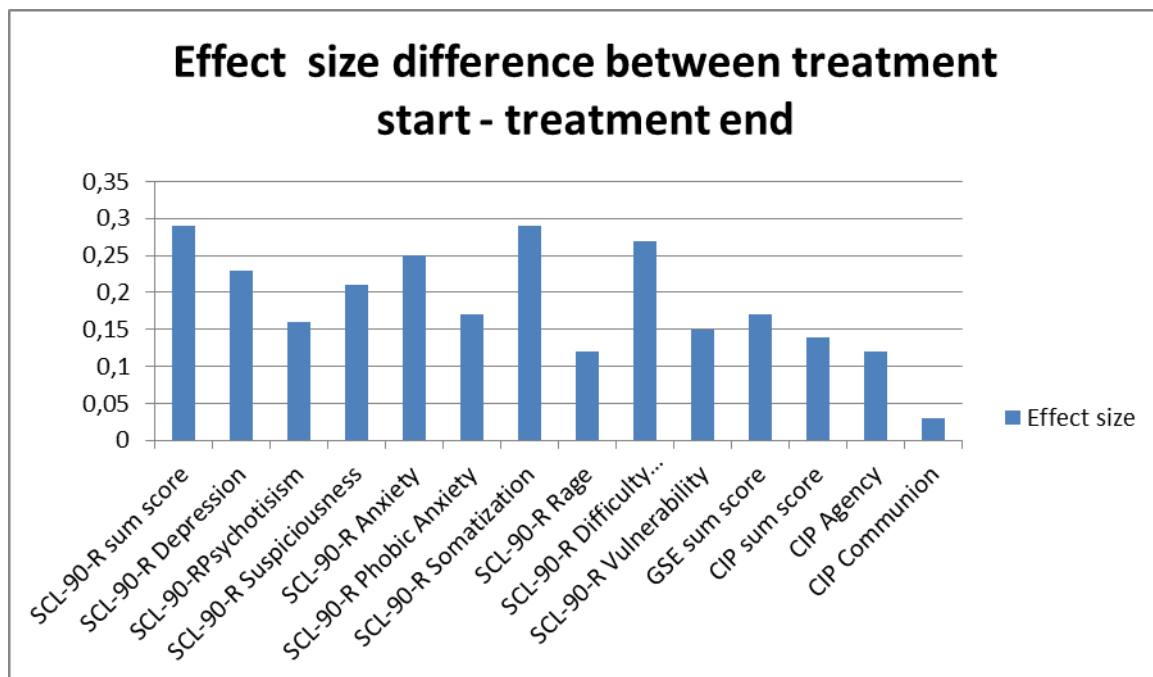


Figure 1 *Effect size – difference between treatment start and treatment end*