

## **SOCIAL NETWORKS, SUPPORT, AND PSYCHOSOCIAL FUNCTIONING AMONG AMERICAN INDIAN WOMEN IN TREATMENT**

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*The relationship of social networks and social support to the psychosocial functioning (self-efficacy, self-esteem, anxiety, depression, and hostility) of 159 American Indian women undergoing residential substance abuse treatment at Native American Connections was assessed. Social support and active participation by clients' families during treatment were found to be significantly related to improved psychosocial functioning. No relationship was found between positive social networks and psychosocial improvement. Interventions for substance abuse should aim to include family and friends in clients' treatment.*

*Keywords: Social support, social network, substance abuse, treatment, American Indian, women*

American Indians with substance use problems report a large number of stressful life circumstances, including domestic violence, child abuse trauma, negative family relationships, and social isolation (Brindis et al., 1995; Gutierrez, Russo, & Urbanski, 1994). Major obstacles to recovery for American Indian women were reported to include unsupportive partners and returning after treatment to a community where substance abuse is widespread (Brindis et al., 1995). High rates of continued drinking and relapse are common (Herman-Stahl & Chong, 2002; Kivlahan, Walker, Donovan, & Mischke, 1985; Westermeyer & Neider, 1984). Nevertheless, American Indians with high self-esteem and low levels of anger have been shown to have a low relapse rate (18%) 18 months post a substance abuse aftercare intervention (Hassin, 1998).

The risk of relapse among the general treatment population is also associated with psychosocial functioning issues such as self-esteem, depression, self-efficacy, and distress (e.g., Booth, Russell, Soucek, & Laughlin, 1992; Dodge, Sindelar, & Sinha, 2005; Flynn, Walton, Curran, Blow, & Knutzen, 2004; Rychtarik, Prue, Rapp, & King, 1992), as well as the types of social networks the clients have. An evaluation of over 1500 women clients of different ethnic groups (with children or postpartum) funded by the Center for Substance Abuse Treatment showed that the

risk of relapse was significantly reduced if the clients reported fewer associations with negative peer networks, or if they reported having positive family relationships six months post discharge (Ellis, Bernichon, Yu, Roberts, & Herrell, 2004). These findings suggest that for substance abuse treatment to have a long-term positive impact, programs should facilitate the development of social support, positive coping skills, and self-efficacy to combat the negative environmental factors that face the newly rehabilitated individual (Annis, Sklar, & Moser, 1998; McCrady, 2004).

The purpose of this paper is to describe the social networks and their relationship with social support and psychosocial functioning among American Indian women in an urban substance abuse residential treatment program. Social support is assessed by perceived social support, a self report measure from a social support scale (described below), and observed social support, measured as the presence of actions taken by others for the client. Two hypotheses are tested to determine the influence of social support: 1) Social support (perceived or observed) will significantly improve the psychosocial functioning of clients; and 2) Women who have more supportive family and/or friends will be more likely to improve their psychosocial functioning than those who do not. Improved psychosocial functioning will be indicated by an increase in self-esteem or self-efficacy, or a decrease in anxiety, hostility, or depression from intake into the program to discharge from the program.

Israel and Rounds (1987) described social networks as referring to ... "linkages among persons," and social support as referring to "functions that may or may not be provided by these linkages" (p.316). Social support received from others may be perceived or actual (Beattie & Longabaugh, 1997, 1999) and differ with different social networks. Research on general treatment populations showed that social support improved treatment engagement (Lash, Burden, Monteleone, & Lehmann, 2004), increased clients' commitment to treatment (Broome, Simpson, & Joe, 1999), decreased anxiety (Mallinckrodt, 1989), and reduced psychosocial distress (Thoits, 1985). A decrease in relapse was associated with social support that enhanced self-esteem (Booth, Russell, Soucek, & Laughlin, 1992) and encouraged abstinence (Beattie & Longabaugh, 1999; Gordon & Zrull, 1991; Weisner, Delucchi, Matzger, & Schmidt, 2003).

Involvement of individuals from outside of the therapeutic milieu in clients' treatment was significantly related to clients' improved psychosocial well-being (Broome et al., 1999; Galanter, Keller, & Dermatis, 1997; Mallinckrodt, 1989). This is an important consideration for American Indians since they tend to rely on family and extended family networks for social support (MacPhee, Fritz, & Miller-Heyl, 1996). Among socially well-adjusted American Indians, supportive parents and other network support were credited for their success (Neumann, Mason, Chase, & Albaugh, 1991).

Family and peer social relationships have been shown to influence treatment outcome among women (with children or postpartum) six months post discharge (Ellis et al., 2004). They were also found to have an influence during treatment among multi-ethnic clients who were daily users of heroin admitted to three community-based methadone maintenance clinics (Knight & Simpson, 1996). An exploratory factor analysis conducted on items describing family and friends among this population yielded two factors describing peer deviance and family conflict or dysfunction (Knight & Simpson, 1996). Both factors were found to predict poor psychosocial functioning during treatment (Griffith, Knight, Joe, & Simpson, 1998). A reduction in family conflict was associated with less drug use and less criminal activity (Knight & Simpson, 1996). However, if family conflict or peer deviance remained the same or worsened during treatment, the likelihood of clients engaging in drug use or criminal activity increased.

The influence of familial and peer relations on treatment engagement and psychological functioning has not been sufficiently described for American Indian women. Those with a substance use problem report unsupportive partners and family members who drink as experiences in their adult life (Brindis et al., 1995; Chong & Herman-Stahl, 2003). For clients who live in rural areas such as the reservation, participation in the treatment program that helps clients to improve relations with family members who are abstinent or choose new friends is limited. Once clients leave the treatment agency, their chances of resuming relationships with individuals who may have contributed to their earlier use of substances (e.g., partner, family) are high. Being placed in such a situation will require relapse prevention skills (Falkin & Strauss, 2003). In a study aimed at providing telephone aftercare support to American Indian clients who were returning to their reservations after substance abuse treatment, four out of five clients were found to have left their partners at the three-month follow up (after discharge). By the six-month follow up, most were living with their family, and none reported being satisfied with their living conditions (Chong & Herman-Stahl, 2003). This dissatisfaction may predict a relapse if it indicates a less than supportive family network.

Recognizing that including family members and friends in clients' treatment may be beneficial, the urban treatment center involved in this study (Native American Connections) adopted a policy to encourage their active participation and improve clients' social support in agency-sponsored events such as family weekend retreats. The center also encouraged families and friends to come to graduation, as well as to other less regular events. To measure support that was observable while the client was in treatment, we selected two activities for which we had information: participation of family and friends in family weekend retreats and client graduation. The family weekend was a three-day intensive retreat for

clients and family. The definition of family by the program was broad and included anyone that the client felt was important to her. Such events were organized for no more than four families at a time. Outside support systems were encouraged to attend graduation ceremonies to mark an important milestone, and to help clients feel proud of their achievements. Family and friends who attended these events included probation officers and tribal counselors from within and outside of the State.

The salient characteristic shared by these two activities is their resource-intensive nature. Participation may be difficult for clients' families and friends due to the distance that most have to travel from rural reservations. The knowledge that her family and associates are willing to show their commitment and support by making the journey to the treatment center may have an immediate and lasting influence on how a client interacts with friends and family when she returns home. We believe that this measure, which we term observed social support, is an indicator to the client of others' commitment toward her. Psychosocial changes between those who had such observed support and those who did not have involvement of family and friends when they were in treatment were compared.

### **Methods**

Adult American Indian women entering a residential substance abuse treatment program at Native American Connections were recruited within 3 days of entry to participate in a treatment outcomes study as part of a Treatment Capacity Expansion grant funded by the Center for Substance Abuse Treatment (CSAT). The period of recruitment was between February 2002 and May 2004. The clients came from urban and rural areas, with a large proportion from southwest American Indian reservations. Only two criteria were needed for participation in the research part of the project for these clients: that they are American Indians and that they were willing to be interviewed for research purposes (and indicated so by signing a consent form which described the research procedures). No compensation was given for the intake or discharge interviews.

Previously approved informed consent procedures used for recruitment included informing the clients that their responses were voluntary and that results to be reported would be in summary form and not identifiable. Honesty in responses was stressed. The recruitment and interviews were conducted by two trained American Indian research interviewers in a private office. A total of 346 American Indian women were interviewed at baseline. Thirty-five women who were approached refused to participate in the research (9%).

Several questionnaires developed by the Institute of Behavioral Research at the Texas Christian University (TCU) were used (questions about family, friends, and psychosocial functioning). They are the TCU's Intake Questionnaire for women in residential treatment and the Client Evaluation of Self and Treatment (CEST). To compare differences between clients who were included in the study and those that were not, severity composite scores from the Native American Addiction Severity Index (ASI-NAV; Carise, Wicks, McLellan, & Olson, 1998) were used. These questionnaires (TCU questionnaires and ASI-NAV) were used in addition to those required by CSAT, the funding agent.

### **Relationship with Family and Friends**

Information about clients' social networks was collected using items taken from the TCU Intake Questionnaire (see Appendix 1). Clients were asked to rate specific sentences with regard to their family and their friends. This instrument had been in use by the Drug Abuse Treatment for AIDS-risks reduction (DATAR) Project since the late '80s (Simpson, 1991), and is available on the TCU-IBR Web site. Clients were asked to rate what it usually was like when they spent time together with their family, as well as to rate sentences that describe their friends in terms of their activities and their attitudes. For all questions, the rating was from never, rarely, sometimes, often, to almost always. Similar to that reported by Knight and Simpson (1996), two factor analyses were conducted, one for the client's family, and the other, the friends. The varimax rotated factor scores from each analysis were used as variables to describe clients' social networks.

Clients' psychosocial functioning was measured using the CEST. This instrument provides a comprehensive but brief means of measuring a number of psychosocial and treatment attributes of clients as well as program characteristics while in treatment (Joe, Broome, Rowan-Szal, & Simpson, 2002). Several of its subscales were used in this paper: self-esteem, depression, anxiety, self-efficacy, hostility, and perceived social support (see Appendix 1). Clients rate sentences regarding whether they strongly disagree (1) to strongly agree (7) with each sentence. Some ratings were recoded to ensure that high values denoted a higher value of the attribute. The scales have been found to be comparable to other established scales (Joe et al., 2002). The subscales have good psychometric properties with relatively high reliability and goodness of fit coefficients across split half samples ( $N = 787$ ) (Knight, Holcom, & Simpson, 1994). More recent psychometric data with a larger group of respondents ( $N = 1702$ ) from 85 treatment units showed that alpha for self-esteem, depression, anxiety, hostility, and social support were 0.75 or better. The alpha coefficient for self-efficacy was 0.63 (Joe et al., 2002). No information is available regarding how well the scales apply to American Indians.

General self-efficacy was measured using 7 items. Self-esteem was measured using 6 items, hostility was measured with 8 items; anxiety was measured with 7 items; depression with 6 items; and perceived social support with 12 items. For each scale, the maximum score would be 7 (highest possible score per item) multiplied by the total number of items in that scale, and the lowest score would be 1 (lowest possible score by item) multiplied by the total number of items in that scale. Dependent measures were difference scores of these constructs (Discharge – Intake). For self-esteem and self-efficacy, a positive difference score suggests higher self-esteem or self-efficacy at discharge. In contrast, for anxiety, hostility, and depression, a negative score indicates a good outcome; that is, lower anxiety, hostility, and depression at discharge. Since changes across the measures were not compared, the difference scores were not standardized.

The perceived social support measure was also taken from the CEST and contains 12 items describing the existence of unspecified individuals who provide support and have expectations of the clients as well as an item each on family, friends, and the work environment. Only the baseline measure of social support was used in this set of analyses because the clients' perceptions upon entry into the program may be an important predictor of changes in psychosocial functioning.

The observed social support did not depend on client self-report but instead was information collected from the counselors as well as administrative records. This measure indicated whether family, friends, or associates participated in organized events such as the client's graduation, or weekend-long family therapy events (coded yes/no).

#### **Addiction Severity Index Native American Version**

The Addiction Severity Index Native American Version (ASI-NAV) was used to compare the problem severity of clients who were included in the analysis for this article with those who were not. The ASI-NAV is an adaptation of the Addiction Severity Index (ASI) and was developed to accommodate Native American cultural practices (Carise et al., 1998), based on pilot tests with North Dakota tribes (Carise & McLellan, 1997). The composite scores are derived in the same manner as the ASI. The ASI has been used in a variety of settings and has been shown to have good reliability and validity among different populations (Grissom & Bragg, 1991; Kosten, Rounsaville, & Kleber, 1983; McLellan et al., 1985). The composite scores indicate the severity of specific problem areas (medical status, employment/support status, substance use, legal, family/social, and psychiatric status) in terms of the need for further or additional intervention. The ASI composite scores range between 0 (denoting no problem) and 1 (denoting most severe problem).

Data collected were entered into a Microsoft ACCESS database and subsequently converted into an SPSS database for statistical analyses. Factor analyses were used to obtain information about the clients' social networks; these networks were then assessed to determine their relationships with social support as well as with the clients' psychosocial functioning. Data analyses included exploratory factor analyses, correlations, multiple regressions and Analysis of Variance (ANOVA). Varimax rotations were used for the factor analyses, and only factors with eigenvalues of 1 or greater were accepted. Statistical significance was set at  $p \leq 0.05$ , with Bonferroni corrections used for post hoc tests. Power for the multiple regressions, given a small  $r$  square of 0.1 for a sample of 159 individuals, was calculated to be at 0.91 using the PASS power software (Hintze, 2000).

Only individuals who had completed all three sets of questions that were used for this paper were included in this analysis. These questions were in regard to clients' families and friends, and for the CEST questionnaire, completed twice, once at intake and once at discharge. Not everyone received all of the intake questionnaires or the discharge questionnaire for a variety of reasons. Some clients were "lost" because they left before completing all the baseline/intake questionnaires. Since the priority questionnaires, that is, those required by the funding agent (CSAT), have to be administered first, the set of questions to be used for this study may not have been administered if clients dropped out within the first seven days of the program, but after they had been given the CSAT questions. Clients were considered to be a part of the project if they completed the CSAT intake questions, regardless of whether they completed the other questions. Clients who did not receive the discharge questionnaire include those who left earlier than expected, either against staff advice (19%) or for logistical reasons. These reasons include being transferred, hospitalized, or jailed, or having unexpected transportation available for clients to go home prior to the interview appointment. Out of the 346 American Indian women interviewed at baseline, 159 clients were included in the analysis because they satisfied the prerequisite of completing all of the questions for this study.

## Results

Table 1 shows the demographic characteristics of clients who received all three questionnaires (and, therefore, were included in the analyses for this paper) and those who did not. The group that was not included in the analysis stayed for significantly fewer mean number of days in the program, was significantly less likely to be classified as having completed treatment, was significantly more likely to have used drugs in the 30 days before entering treatment, and had fewer years of education than the group that was included in the analysis. Additionally, the group

**Table 1**  
**Differences Between Clients Who Had a Complete Set of Data Versus Those Who Did Not**

	Std. Error Difference	Not included (N = 187)	Included (N = 159)	Mean Difference	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
Length of Stay (days)	2.01	36.30	49.35	-13.05	-17.01	-9.09	-6.48	344	<b>0.00</b>
Age (years)	0.82	31.41	32.19	-0.78	-2.38	0.83	-0.95	344	0.34
Treatment Completion (1,0)	0.04	0.68	0.99	-0.31	-0.38	-0.24	-8.27	344	<b>0.00</b>
Education (years)	0.23	10.91	11.45	-0.53	-0.99	-0.07	-2.28	344	<b>0.02</b>
Past 30 day Substance Use (1, 0)									
Alcohol	0.03	0.89	0.94	-0.04	-0.10	0.02	-1.45	344	0.15
Drug	0.05	0.64	0.46	0.18	0.07	0.28	3.35	344	<b>0.00</b>
Alcohol problems	0.03	0.35	0.36	-0.00	-0.06	0.06	-0.02	342	0.98
Drug problems	0.01	0.14	0.09	0.05	0.02	0.07	3.45	343	<b>0.00</b>
Employment problems	0.03	0.85	0.80	0.05	-0.00	0.10	1.88	344	0.06
Legal problems	0.02	0.26	0.24	0.02	-0.02	0.07	1.05	344	0.29
Social problems	0.03	0.32	0.29	0.03	-0.03	0.09	1.07	340	0.29
Psychiatric problems	0.03	0.39	0.31	0.08	0.03	0.14	3.05	344	<b>0.01</b>
Perceived social support (12 – 84)	1.22	60.72	64.38	-3.67	-6.06	-1.29	-3.01	320	<b>0.01</b>
Observed social support (1, 0)	0.05	0.40	0.54	-0.14	-0.25	-0.04	-2.62	344	<b>0.01</b>
Self-efficacy (7 – 49)	0.82	35.03	35.52	-0.49	-2.10	1.13	-0.59	320	0.55
Self-esteem (6 – 42)	0.76	27.91	27.58	0.33	-1.16	1.82	0.44	320	0.66
Depression (6 – 42)	0.75	20.47	20.10	0.37	-1.11	1.85	0.49	320	0.62
Anxiety (7 – 49)	1.03	25.78	24.84	0.94	-1.09	2.98	0.91	320	0.36
Hostility (8 – 56)	1.08	24.15	22.86	1.29	-0.83	3.42	1.20	320	0.23

Nb: Range of scores are provided in parentheses.

that was not included also showed significantly more severe drug and psychiatric problems as indicated by the ASI composite scores. Finally, this group also reported significantly lower perceived and observed social support. No significant differences were found between the two groups in their intake psychosocial functioning, as measured by the CEST.

### Social Networks

Two rotated factors emerged in the factor analysis of the family questions, accounting for 61.85% of the variance. To facilitate interpretation, only items with loadings (or correlation) of at least 0.45 (the lowest loading that provided the most unique items for each factor) were considered. These items are boldfaced in Table 2. The variance explained by each factor and the reliability analyses (coefficient alphas) are shown. The first factor describes a family that is considered close knit ("Close-Knit" family), and the second describes a family that uses substances together and appears to have negative social interactions ("Substance-Using" family). The coefficient alpha is high for the "Close-Knit" family items and lower for the "Substance-Using" family items. From the factor analysis of the questions about the clients' friends, five rotated factors emerged, accounting for 61.48% of the variance. The factors are termed "Substance-Using," "Family-Oriented," "Unsupportive," "Problematic," and "Respectful" friends respectively (Table 3). Items used to describe "Substance-Using" friends and "Unsupportive" friends showed high consistency.

The mean **Perceived** Social Support score was 64.38 (sd 10.29), ranging from 25 to 84. For **Observed** Social Support, approximately one half (46.5%) of the clients had outside family participate in their graduation, and 16.4% of the clients participated in the program's sponsored family weekend retreats. With the two groups combined, 54.1% of clients were coded as having observed support, that is, had family and/or friends participating in program events while they were part of the treatment program.

**Table 2**  
**Factor Analysis Results Describing Family Types**

	"Close-knit"	"Substance-Using"
Have disagreements?	-0.38	<b>0.52</b>
Get drunk together?	-0.07	<b>0.83</b>
Use other drugs together?	-0.02	<b>0.79</b>
Have loud arguments or fights?	<b>-0.55</b>	<b>0.50</b>
Feel bored?	<b>-0.58</b>	0.35
Help each other with problems?	<b>0.80</b>	-0.07
Talk as friends?	<b>0.84</b>	-0.11
Get along together?	<b>0.84</b>	-0.19
Really enjoy being together?	<b>0.85</b>	-0.07
<b>Variance accounted (%) Total: 61.85%</b>	39.46	22.39
<b>Coefficient Alpha</b>	0.88*	0.69

Nb: Question: What was it usually like when you spend time together with your family?  
How often did you (Response: Never, rarely, sometimes, often, almost always):  
\* Only those loading positively on the factor (Close-knit) were used

**Table 3**  
**Factor Analysis Results Describing Friend Types**

	"Substance-Using"	"Family-Oriented"	"Unsupportive"	"Problematic"	"Respectful"
<sup>b</sup> Ask for your advice about their problems?	-0.00	0.03	-0.11	0.35	<b>0.69</b>
<sup>b</sup> Agree with your ideas?	0.17	0.01	0.01	-0.15	<b>0.81</b>
<sup>b</sup> Look to you as a leader?	0.02	-0.09	0.09	0.01	<b>0.81</b>
<sup>a</sup> Friends get into arguments	0.15	-0.22	0.01	<b>0.75</b>	-0.09
<sup>b</sup> Take risks/chances?	0.29	-0.03	0.24	<b>0.57</b>	0.23
<sup>b</sup> Cause trouble for you?	0.34	0.03	0.36	<b>0.59</b>	0.09
<sup>b</sup> Encouraged you to enter this program?	-0.05	0.33	<b>-0.71</b>	-0.18	0.05
<sup>b</sup> Really care about you?	-0.38	0.28	<b>-0.69</b>	0.13	-0.00
<sup>b</sup> Will help you quit drugs?	-0.37	0.37	<b>-0.64</b>	-0.22	0.06
<sup>b</sup> Laugh or make fun of you?	0.06	0.16	<b>0.57</b>	0.12	0.05
<sup>a</sup> Like being with their family?	-0.14	<b>0.84</b>	-0.13	-0.16	-0.01
<sup>a</sup> Seem positive or optimistic about life?	-0.43	<b>0.47</b>	-0.13	-0.26	0.06
<sup>a</sup> Spend time with their families?	-0.09	<b>0.78</b>	-0.09	-0.05	-0.13
<sup>a</sup> Work regularly on a job?	-0.44	<b>0.46</b>	-0.01	0.13	0.05
<sup>a</sup> Get high from too much alcohol?	0.44	-0.36	0.32	0.39	-0.07
<sup>b</sup> Do things that get them into trouble?	<b>0.49</b>	-0.11	<b>0.51</b>	0.44	0.11
<sup>a</sup> Go to jail/prison?	<b>0.52</b>	-0.17	0.15	0.24	0.23
<sup>a</sup> "Hang out" with other gangs?	<b>0.60</b>	0.01	0.13	0.17	0.08
<sup>a</sup> Use other drugs?	<b>0.68</b>	-0.33	0.12	0.17	0.05
<sup>a</sup> Do other things against the law?	<b>0.84</b>	-0.15	0.21	0.21	0.09
<sup>a</sup> Trade, sell or deal drugs?	<b>0.87</b>	-0.11	0.12	0.09	0.01
<b>Variance accounted (%)</b>					
<b>Total: 61.48%</b>	<b>18.68</b>	<b>11.81</b>	<b>11.55</b>	<b>10.07</b>	<b>9.37</b>
<b>Coefficient Alpha</b>	<b>0.86</b>	<b>0.69</b>	<b>0.76*</b>	<b>0.63</b>	<b>0.69</b>

Nb: Two questions (Response: Never, rarely, sometimes, often, almost always):

<sup>a</sup>What are your friends and associates like? In general, do they:

<sup>b</sup>How often would you say that your friends:

\* Only those loading negatively on the factor (Unsupportive) were used.

Prior to the regression analyses, correlational analyses were conducted with the "Family" and "Friend" variables from the factor analyses, perceived and observed social support, and changes in the five psychosocial variables. Unless specified otherwise, all correlations mentioned are significant and positive. Perceived social support was significantly correlated with "Close-Knit" family ( $r = 0.22, p < 0.01$ ) and "Respectful" friends ( $r = 0.17, p < 0.05$ ), and negatively correlated with "Substance-Using" friends ( $r = -0.22, p < 0.01$ ). Observed social support correlated only with "Respectful" friends ( $r = 0.23, p < 0.01$ ). Perceived and observed social support did not correlate significantly with each other ( $r = 0.01, p > 0.1$ ), even though both were significantly correlated with "Respectful" friends. The "Substance-Using" family variable was significantly correlated with the "Substance-Using" friends variable ( $r = 0.18, p < 0.05$ ). None of the other factors for "Friends" correlated with the two factors for "Family." The factors could not correlate with each other within each factor analysis since, by definition, they are independent factors.

### **Relationship Between Social Support and Changes in Clients' Psychosocial Functioning**

Mean scores for the levels of psychosocial functioning at discharge did not differ between those with high perceived and high observed social support. Perceived social support at intake was found to correlate significantly with changes in psychosocial functioning: negatively with self-efficacy and self-esteem, and positively with changes in anxiety, hostility and depression. Observed support negatively correlated with depression but positively correlated with self-esteem. Greater improvements in self-efficacy and self-esteem are seen among clients with low perceived social support and among clients with high observed support. Similarly, the significant positive correlations between perceived social support with anxiety, hostility and depression indicate that lower perceived social support at intake was associated with greater decreases in those measures. The "Substance-Using" friends variable showed a significant negative correlation with hostility and depression, and a significant positive correlation with self-esteem. Clients who scored higher on the "Substance-Using" friends factor improved more in terms of self-efficacy, and showed a greater decrease in hostility and depression than those who scored lower on that factor.

Linear regression analyses were conducted with the psychosocial change measures (Discharge – Intake) as dependent variables (see Table 4). To eliminate potential confounding, two sets of analyses were conducted: one with the social support variables, and the other with the "Family" and "Friend" factors as predictors.

Perceived social support at intake was significantly related to increases in self-esteem and self-efficacy, and with decreases in hostility, anxiety and depression. In contrast, observed social support was related significantly only to improvement in self-esteem, and a decrease in depression. While each of the models using the social support variables as predictors were significant, the best model only predicted about 11.4% of the variance (self-esteem). The models (for each psychosocial measure) using the "Friend" and "Family" factors were not significant with the exception of the depression model (Adjusted R squared = 0.05,  $p < 0.05$ ; not shown). This suggests that other factors may be much better able to account for the variance than these social support variables. Consistent with the correlational analysis, "Substance-Using" friends significantly contributed to the model for depression ( $t = -3.10$ ,  $p < 0.01$ ).

**Table 4**  
**Linear Regressions of Social Support Variables**  
**on Psychological Characteristics**

Source	Measure	Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	P
Self-esteem	Constant	17.36	3.45		5.04	<b>0.00</b>
Adj. R square =	Perceived social support	-0.20	0.05	-0.29	-3.82	<b>0.00</b>
0.114, p < 0.001	Observed social support	2.99	1.07	0.21	2.78	<b>0.01</b>
Self-efficacy	Constant	12.94	4.09		3.16	<b>0.01</b>
Adj. R square =	Perceived social support	-0.17	0.06	-0.21	-2.71	<b>0.01</b>
0.041, p < 0.02	Observed social support	1.48	1.28	0.09	1.16	0.25
Hostility	Constant	-18.98	4.34		-4.38	<b>0.00</b>
Adj. R square =	Perceived social support	0.25	0.07	0.29	3.85	<b>0.00</b>
0.084, p < 0.001	Observed social support	-1.80	1.35	-0.10	-1.33	0.19
Anxiety	Constant	-18.70	4.19		-4.47	<b>0.00</b>
Adj. R square =	Perceived social support	0.25	0.06	0.30	3.90	<b>0.00</b>
0.089, p < 0.001	Observed social support	-2.01	1.31	-0.12	-1.54	0.13
Depression	Constant	-14.91	2.88		-5.19	<b>0.00</b>
Adj. R square =	Perceived social support	0.17	0.04	0.29	3.80	<b>0.00</b>
0.107, p < 0.001	Observed social support	-2.32	0.90	-0.20	-2.59	<b>0.01</b>

The two social support variables (perceived and observed) show different relationships with self-esteem and depression from each other, as indicated by the beta coefficients. While the effect strengths are similar (comparing the standardized beta coefficients), they appear to work in opposite directions. To further assess the seemingly contrary finding between the two social support variables, another analysis was conducted. Since the two variables (perceived and observed social support) are uncorrelated with each other, they were combined into a general social support variable with four categories: High Perceived and High Observed, High Perceived and Low Observed, Low Perceived and High Observed and Low Perceived and Low Observed social support. High and low perceived social support was divided using a mean split. A one way ANOVA was conducted with the social support variable (4 levels) as the between subjects measure, and the changes in psychosocial functioning as the dependent variables (Table 5). Significant main effects of changes in self-esteem, anxiety, hostility, and depression were found. Comparisons (using

**Table 5**  
**One Way Analysis of Variance With Social Support (4 Levels)**  
**and Changes in Psychosocial Functioning**

		Sum of Squares	df	Mean Square	F	Sig.
Self-efficacy	Between Groups	329.70	3	109.90	1.66	0.18
	Within Groups	10253.07	155	66.15		
	Total	10582.77	158			
Self-esteem	Between Groups	652.68	3	217.56	4.52	<b>0.01</b>
	Within Groups	7468.27	155	48.18		
	Total	8120.96	158			
Anxiety	Between Groups	721.12	3	240.37	3.40	<b>0.02</b>
	Within Groups	10947.61	155	70.63		
	Total	11668.73	158			
Hostility	Between Groups	852.36	3	284.12	3.80	<b>0.01</b>
	Within Groups	11579.92	155	74.71		
	Total	12432.28	158			
Depression	Between Groups	659.34	3	219.78	6.88	<b>0.00</b>
	Within Groups	4952.22	155	31.95		
	Total	5611.56	158			

**Multiple Comparisons using Bonferroni Corrections**  
**with High Observed Low Perceived Groups**

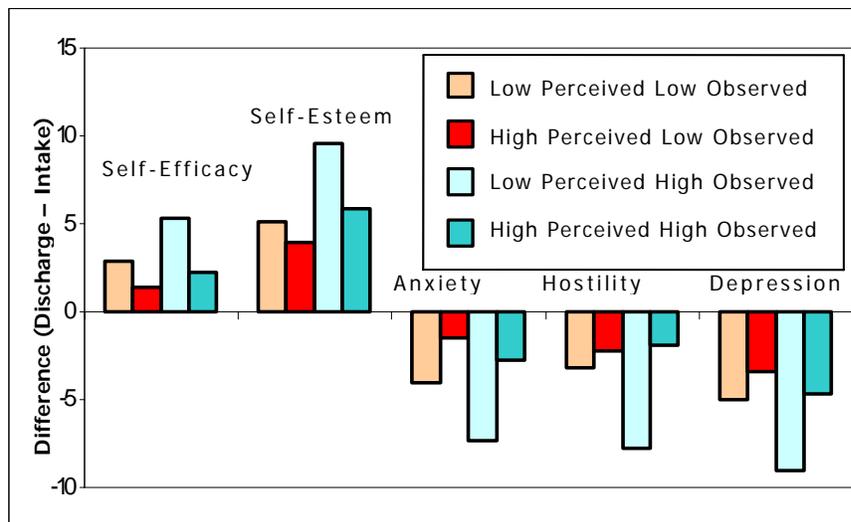
	Levels of social support	Mean Difference*	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Self-esteem	LPLO	4.42	1.59	<b>0.04</b>	0.17	8.68
	HPLO	5.61	1.63	<b>0.00</b>	1.27	9.96
	HPHO	3.63	1.51	<b>0.10</b>	-0.40	7.66
Anxiety	LPLO	-3.29	1.93	0.54	-8.44	1.86
	HPLO	-5.89	1.97	<b>0.02</b>	-11.15	-0.62
	HPHO	-4.57	1.83	0.08	-9.45	0.31
Hostility	LPLO	-4.58	1.98	0.13	-9.88	0.72
	HPLO	-5.48	2.03	<b>0.05</b>	-10.89	-0.07
	HPHO	-5.80	1.88	<b>0.01</b>	-10.82	-0.78
Depression	LPLO	-3.97	1.30	<b>0.02</b>	-7.44	-0.51
	HPLO	-5.57	1.32	<b>0.00</b>	-9.11	-2.03
	HPHO	-4.36	1.23	<b>0.00</b>	-7.64	-1.08

Nb: \* Mean difference is difference between Low Perceived High Observed (LPHO) and the others.  
 Positive difference means that LPHO has the higher score.

(LPLO Low Perceived Low Observed; HPLO High Perceived Low Observed;  
 LPHO Low Perceived High Observed; HPHO High Perceived High Observed)

Bonferroni corrections) between the levels of social support indicated significant differences between individuals classified as having low perceived and high observed social support with those classified as having high perceived and low observed social support for all psychosocial changes except self-efficacy. The pattern of change was similar across all five psychosocial variables tested (Figure 1).

**Figure 1**  
**Changes in Psychosocial Functioning**  
**as a Function of Perceived and Observed Social Support**



**Discussion**

Our understanding of substance abuse treatment among American Indians is limited mainly to the environmental factors that led them to treatment and the factors that led them to relapse. In this paper, we have attempted to describe the relationship between the clients' social networks, their perceived and observed social support, and changes in psychosocial functioning during treatment. The first hypothesis was supported: social support was significantly related to psychosocial functioning. The second hypothesis, however, was not. Women with more supportive families and/or friends did not appear to show greater improvement in the psychosocial measures. The "Substance-Using" friends factor was the only variable to show a significant relationship with clients' psychosocial functioning. Nevertheless, families that are close knit and friends that show respect for the clients were significantly correlated with perceived social support, which in turn, was significantly related to improved psychosocial functioning.

### **Factor Profiles of Family and Friends**

The two "Family" factors described opposite ends of the family spectrum, with one describing a close-knit family, and the other, a family that uses substances and appears dysfunctional. The absence of a strong relationship between clients' changes in psychosocial functioning and the two family networks is surprising. A study conducted on similar populations of American Indian women in substance abuse treatment reported a small but significant negative impact of families that use substances on clients' improvement in self-esteem (Gutierrez et al., 1994). That finding was not replicated in this study.

Friends, on the other hand, appear to have a stronger association with clients' psychosocial functioning. Out of the five "Friend" variables that were obtained from the factor analysis, the "Substance-Using" friends factor based on the intake data showed the strongest relationship with clients' psychosocial functioning. At the time of discharge from the treatment program, clients who scored higher on the "Substance-Using" friends factor became significantly less hostile and less depressed. There are at least two possible reasons for this finding. Further investigation showed that individuals who scored high on the "Substance-Using" friends factor were found to be twice as likely to have used drugs in the 30 days before entering treatment compared to those who scored lower. Alcohol use did not show such a difference. Second, being in a milieu that distanced the clients from negative networks may have weakened the influence of "Substance-Using" friends.

If clients are indeed influenced more by negative than positive social networks, then the approach adopted by the treatment program involving family and other individuals during treatment appears to be quite appropriate. Unlike the relatively impoverished social networks of outpatients on methadone maintenance reported by the TCU group (Griffith et al., 1998; Knight & Simpson, 1996), the clients in this study appear to have a varied group of social networks. Clients need to be guided toward those positive networks.

### **Social Support**

Perceived social support at intake was shown to be a significant predictor of improved psychosocial functioning. Having perceived social support at intake indicates that clients believe they have people around them who would motivate and care for them, have confidence in, respect for, and expectations of them, and understand their problems. These clients showed higher self-efficacy and self-esteem, and lower depression, anxiety and hostility at the beginning of their treatment program than

those found to have lower perceived social support. The higher initial level of functioning may be a reason why they did not show as much improvement as those with lower perceived social support.

While the social support scale used here included statements that describe different types of social support (e.g., emotional, informational), there was no statement that asked about the provision of tangible social support (e.g., do tasks for client, show physical commitment, provide transportation, etc.). This may be the reason why perceived social support was not correlated with observed social support. The moderating effect of the observed social support on perceived social support is suggested from the combined perceived and observed social support variable. Clients with high perceived social support improved significantly less if they did not have family or friends providing observed social support than clients with low social support who did have family and friends involved in their treatment. This latter group improved to a level comparable to those with high perceived social support. These findings are consistent with existing literature showing that clients' mental health improved when they had others involved and demonstrating positive behaviors (Thoits, 1985).

Our findings with the observed social support agree with earlier findings which showed that involving family and outside individuals in therapy is associated with decreased depression and increased self-esteem (Broome et al., 1999; Mallinckrodt, 1989). Further analysis is needed to understand and define observed social support more clearly, as well as to assess the perceived quality of such support, a value found to be associated with psychological well-being (Israel, 1985). The activities that constitute observed social support may differ with different treatment populations. More research is needed to determine what actions are sufficient to be considered an act of observed social support, and whether different client types respond differently.

In addition, our findings are consistent with others and suggest that treatment interventions should aim to increase structural support (social network and integration) as well as to provide specific support to help maintain abstinence (Havassy, Hall, & Wasserman, 1991). The quality of relationships with extended family, friends, and partner/spouse has been found to predict long-term abstinence (Ellis et al., 2004; Humphreys, Moos, & Cohen, 1996). Thus, relapse may be mitigated if the treatment agency helps the client build up and strengthen her social support, maintain the relationships with those who provided observed social support during treatment, and discourage association with substance using (deviant) peers. If the size of the positive social network is increased, another positive outcome may result, since the number of individuals within a network is negatively associated with anxiety, depression, and hostility for females (Sarason & Sarason, 1985).

### Study Limitations

A number of issues could not be resolved in this study. It is clear that other factors are involved in clients' psychosocial changes, as evidenced by the low amount of variance explained and significant residuals in the regressions. Additionally, it is not possible to attribute causal influences or impact of the social networks on psychosocial functioning.

Another limitation is that this study may not be generalizable, because there were significant differences between clients who were not included in the data analyses and those who were. Individuals dropped from the analyses had more severe psychiatric problems, more severe drug problems, or were current drug users. These individuals may not show the same results if provided the observed social support measured in this paper. Better methods are needed to minimize loss of data as a result of clients leaving earlier than expected. The TCU program suggests using the questionnaire quarterly to obtain data from clients; however, this is only appropriate for long-term programs. Since the length of the program in this project is 45 days, a mid-program assessment may be useful in future studies.

The questions regarding friends and family may not adequately describe the important social networks that clients have. This may be a reason why we were unable to show any relationship between observed social support and social networks (except for the "Respectful" friends variable, which nevertheless showed no relationship with changes in psychosocial functioning), and why the regression models explained little of the variance. However, the two main factors that were obtained (the "Substance-Using" family and friends) were similar to the family dysfunction and peer deviance factors reported by Knight and Simpson (1996) and had items similar to those reported by Ellis et al. (2004).

Unfortunately, we did not have information that would allow us to separately analyze the relationships between the client and her family and friends. A larger sample is needed to determine if different types of observed social support would show different results. Among clients who left early and were not included in this paper, the levels of perceived and observed social support were lower than for those who were included. One obvious reason for the lower observed social support score is that these individuals did not attend graduation. Nevertheless, it is also possible that if observed support was given early in these clients' treatment, dropout rates may decrease.

As mentioned earlier, the observed social support variable needs to be defined more precisely. While we were fortunate in selecting useful and predictive indicators of observed social support for this population, other exemplars need to be determined. How much effort (or commitment) that supportive individuals need to show for observed support is not known. One possible way to improve the observed social support measure would

be to record the number of times the clients had visitors, or the types of visitors they had. However, to count the number of visits may result in biased measures since such measurements assume that each client has visitors that have an equal opportunity to visit. As noted, it may be useful to determine whether the relationships between the client and the individuals (e.g., spouse, parents, siblings, professional associations, etc.) who provide the observed social support result in different psychosocial changes, as well as measuring the social support (perceived or observed) in terms of clients' social networks. Further research is needed to determine if clients who were shown observed support can reach out to those who provided the support when they leave the treatment environment.

Finally, this study did not address the longevity of the boost provided to clients by the observed social support, and whether the improvements would continue when clients are discharged from the treatment program. Further research is needed to study other types of social networks, and explore further how the different positive social networks can be garnered to counteract the negative social networks that represent the client's real world.

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Agency administrators and clinicians worked on informed consent procedures and protocols to ensure that the evaluation process is not stressful for the clients, and that clients do not feel coerced into participating in the evaluation process. Native American Connections works with clients with substance abuse problems, and is very clear on the need for confidentiality and HIPAA guidelines, on which all staff (including evaluation staff) has been trained.

## Appendix A

## Client's Evaluation of Self and Treatment (CEST)

<p>1 Strongly Disagree 2 3 4 Not Sure 5 6 7 Strongly Agree</p> <p>R) Reversed coding</p>	<p><b>Hostility (8 – 56)</b></p> <p>'You feel mistreated by other people' 'You like others to feel afraid of you' 'You have urges to fight or hurt others' 'You have a hot temper' 'Your temper gets you into fights or other trouble' 'You get mad at other people easily' 'You have carried weapons, like knives or guns' 'You feel a lot of anger inside you'</p>
<p><b>Self-efficacy (7 – 49)</b></p> <p>'You have little control over the things that happen to you' R) 'There is really no way you can solve some of the problems you have' R) 'You often feel helpless in dealing with the problems of life' R) 'There is little you can do to change many of the important things in your life' 'Sometimes you feel that you are being pushed around in life' 'What happens to you in future mostly depends on you' 'You can do just about anything you really set your mind to do'.</p>	<p><b>Anxious (7 – 49)</b></p> <p>'You have trouble sitting still for long' 'You have trouble sleeping' 'You feel anxious or nervous' 'You have trouble concentrating or remembering things' 'You feel afraid of certain things, like elevators, crowds, or going out alone' 'You feel tense or keyed-up' 'You feel tightness or tension in your muscles'</p>
<p><b>Self-esteem (6 – 42)</b></p> <p>'You have much to be proud of' 'In general you are satisfied with yourself' 'You feel like a failure' R) 'You feel you are basically no good' R) 'You wish you had more respect for yourself' R) 'You feel you are unimportant to others' R)</p>	<p><b>Depression (6 – 42)</b></p> <p>'You feel sad or depressed' 'You have thoughts of committing suicide' 'You feel lonely' 'You feel interested in life' R) 'You feel extra tired or run down' 'You worry or brood a lot'</p>
<p><b>Social Support (12 – 84)</b></p> <p>'Several people close to you have serious drug problems' R) 'You have people close you who respect you and your efforts in this program' 'You have people close to you who understand your situation and problems' 'You have people close to you who can always be trusted' 'You have people close to you who motivate and encourage your recovery' 'You have people close to you who expect you to make positive changes in your life' 'You have improved your relations with other people because of this treatment' 'Other clients in this recovery are helpful in your recovery' 'You have people close to you who help you develop confidence in yourself' 'You have close family members who help you stay away from drugs' 'You work in situations where drug use is common' R) 'You have good friends who do not use drugs'</p>	

**Family and Friends Questions (TCU Intake)**

**FRIENDS**

- What are your friends and associates like? In general, do they:  
 0 Never 1 Rarely 2 Sometimes 3 Often 4 Almost Always
- 1 Work regularly on a job?
  - 2 Seem positive or optimistic about life?
  - 3 Get into arguments or fights?
  - 4 Spend time with their family?
  - 5 Like being with their family?
  - 6 Get high from too much alcohol?
  - 7 Use other drugs?
  - 8 Trade, sell or deal drugs?
  - 9 Do other things against the law?
  - 10 "Hang out" with other gangs?
  - 11 Go to jail or prison?
  - 12 Go to treatment for drugs and alcohol?

- How often would you say that your friends:  
 0 Never 1 Rarely 2 Sometimes 3 Often 4 Almost Always
- 1 Look to you as a leader?
  - 2 Agree with your ideas?
  - 3 Laugh at or make fun of you?
  - 4 Ask for your advice about their problems?
  - 5 Cause trouble for you?
  - 6 Take risks or chances?
  - 7 Do things that can get them into trouble?
  - 8 Encouraged you to enter this program?
  - 9 Will help you quit drugs?
  - 10 Really care about you?

**FAMILY**

What was it usually like when you spent time together with your family? How often did you:

		Never	Rarely	Some- times	Often	Almost Always
1	Get along together?	0	1	2	3	4
2	Really enjoy being together?	0	1	2	3	4
3	Get drunk together?	0	1	2	3	4
4	Have disagreements?	0	1	2	3	4
5	Have loud arguments or fights?	0	1	2	3	4
6	Feel bored?	0	1	2	3	4
7	Help each other with problems?	0	1	2	3	4
8	Talk as friends?	0	1	2	3	4
9	Use other drugs together?	0	1	2	3	4

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