UNEMPLOYMENT, DRUG USE, AND HIV RISK AMONG AMERICAN INDIAN AND ALASKA NATIVE DRUG USERS

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Abstract: American Indians and Alaska Natives have had low employment in recent history. Drug users also have low employment due to cycles of drug use and relapse, and the impact of the type of drug abused on levels of functioning. Drug use is associated with increased HIV risk through injection drug use, frequency of injection, and needle sharing. Data from three sites of the NIDA Cooperative Agreement for Community Based-Outreach/ Intervention Research were analyzed to determine the relationship among race/ethnicity, age, and level of educational attainment on employment and unemployment at intake interview and six-month follow-up. HIV risk for those employed and unemployed was then assessed. American Indian and Alaska Native drug users were younger, less educated, and less likely to have a paid job at both intake and follow-up than non-Native drug users. Those participants who were unemployed at baseline interview who were American Indian/Alaska Native were less likely to "transition to employment" at six-month follow-up than other race/ ethnicity groups in the cohort. However, all participants showed low levels of employment at follow-up. Individuals who were employed at baseline and those who transitioned to employment had lower levels of injection drug use and needle sharing than those who were unemployed at both baseline and follow-up. American Indian and Alaska Native drug users may be at risk for acquisition of HIV due to drug risk behaviors that appear to be associated with unemployment.

Background

The relationship between employment and drug use is a complicated one, and adding race and ethnicity to the equation further complicates it. Historically, American Indian and Alaska Native men and women have not participated in the labor force in large numbers (Jacobson, 1984). It was not until data were available from the 1970 census that researchers began to look closely at labor force participation rates and patterns among American Indians/Alaska Natives (AI/ANs) (Snipp & Aytac, 1990; Snipp & Sandefur, 1988). It was with the 1980 census data that it was discovered that more AI/ANs lived in urban locations than in rural areas, reversing a trend that had been in existence for most of the 20th century. This underscored the importance of an earlier study showing migration from rural to urban areas as a source of improved economic opportunities for AI/ANs (Sorkin, 1971).

Drug users have also not participated in the labor force in large numbers, but their participation is harder to quantify as drug users are considered a 'hidden population.' Further, employment of drug users can be complicated by the type of drug used, and cycles of drug use and relapse, all of which may affect the individual's ability to hold a job (Anglin & Fisher, 1987). Platt (1995), in a review of 20 years of literature on addiction, drug treatment outcomes, and employment, found that employment was an important factor in both successful treatment outcomes and relapse prevention.

As researchers have acquired greater access to drug users, due to more sophisticated methods of sampling hidden populations (Broadhead, et al., 1998; Watters & Biernacki, 1989) and the need to understand the dynamics of the HIV/AIDS epidemic, it has become clear that drug use, in conjunction with the poverty that comes with long term unemployment, increases the risk of acquiring AIDS. For example, in a study of crack cocaine users in the Midwest, the risk of contracting HIV/AIDS was directly linked to unemployment, with the strength of the relationship increasing as the length of time unemployment increased (Braun, Murray, Hannan, Sidney, & Le, 1996). Other factors besides unemployment have been identified as associated with HIV infection among injection drug users in general and AI/ANs in particular.

Injection drug use has been identified as a risk factor for the acquisition of HIV/AIDS, with injection frequency being associated with increased risk of seroconversion (Parent, Hankin, & Claessens, 1998). Needle sharing has also been identified as a high-risk activity among injection drug users (Chitwood et al., 1995; Des Jarlais & Friedman, 1987). Crack (smokable) cocaine use has been associated with risky sexual behaviors and the heterosexual transmission of HIV (Chaisson, Stoneburner, Hildebrandt, Ewing, Telzak, & Jaffe, 1991).

In Alaska, Native women have been identified to be at high risk of infection through injection drug use as well as sexual risk behaviors (Fisher,

Cagle, & Wilson, 1993; Fisher, Fenaughty, & Paschane, 1995). In a multi-site study of AI/ANs, sexual risk behaviors were again identified (Fenaughty, Fisher, Cagle, Stevens, Baldwin, & Booth, 1998).

Determinants of Employment Success

Employment success depends on many variables. Education level is one of the most important factors influencing an individual's ability to obtain and hold employment. The greater the number of years of schooling, the greater the chance of both being employed and earning a higher wage. Age is also an important factor in employment success, and is usually a proxy for experience. The older one is, the more experience one is likely to have at one's trade or profession, and the higher the wage one is likely to be paid for that experience, up until middle-age, at which point most individuals experience a plateau in wages, followed by retirement (Mare, Winship, & Kubitschek, 1984).

Ethnicity plays an important part in employment success and accounts for differences not captured by education and age alone. For example, in studies of employment rates that have compared Whites, African Americans, and AI/ANs, Whites generally have a higher level of education, have higher rates of employment, and higher wage levels (Sandefur & Scott, 1983). African Americans, while generally less educated than Whites, are also generally older than AI/ANs. Therefore, they have employment rates and wages higher than AI/ANs, but lower than Whites. AI/ANs carry the twin burdens of less education and younger age, hence less experience, when compared to these other two groups. In a study of educational outcomes and poverty on AI/AN reservations, Vinje (1996) found that educational attainment was the single most important variable in explaining poverty rates on 23 reservations. The same author found that educational attainment was a good explanatory variable for per capita income level variation among tribes (Vinje, 1977).

Other factors found to determine success in employment include marital status and the number of dependents (Sandefur & Sakamoto, 1988), health status (Luft, 1974), mental health status (Ruhm, 1992), regional location and factors related to regional employment cycles (Reynolds, Fisher, Cagle, & Johnson, 2000; Snipp & Sandefur, 1988), job characteristics (Mensch & Kandel, 1988), age (Kaestner, 1991; Mare, Winship, & Kubitschek, 1984), and gender (Cagle, Fenaughty, Paschane, & Fisher, 1996; Snipp & Aytac, 1990). Among drug users, age of first use of drugs may act as a proxy for education. That is, the younger an individual is at the time s/he begins using drugs, the greater the chance that s/he will stop his/her education if involved heavily in drugs (Kandel & Yamaguchi, 1987). Time in drug treatment, regardless of the type of treatment, has been shown to have a positive effect on the wages of drug users (French, Zarkin, Hubbard, & Rachal, 1991).

The purpose of this study was to determine if a relationship existed between race/ethnicity and employment in a multi-site sample of out-of-treatment drug users and its impact and influence on HIV risk behaviors.

Methods

Data from three sites of the National Institute on Drug Abuse (NIDA) Cooperative Agreement for Community Based Outreach/Intervention were analyzed. These sites (Tucson, Arizona; Flagstaff, Arizona; and Anchorage, Alaska) were selected as contributing significant numbers of AI/AN drug-using participants. To be eligible for the study, participants had to be at least 18 years of age, test positive on urinalysis for cocaine metabolites, morphine or amphetamine, and not have been in any drug treatment in the 30 days prior to the interview, and they had to give informed consent. Participants were recruited into the study through a variety of means, including word of mouth, flyers and advertisements in public places, and through street outreach workers familiar with local drug-using networks.

Participants completed two face-to-face interviews, one at intake, which was the Risk Behavior Assessment (RBA), and one at 6-month follow-up, which was the Risk Behavior Follow-up Assessment (RBFA). The interview was administered to participants the same day on which eligibility was determined. The RBA has been shown to have good reliability on the sex and drug risk behavior variables (Dowling-Guyer, et al., 1994; Needle, et al., 1995; Weatherby et al., 1994). In separate analysis, the employment and income variables were also found to have good reliability (Johnson, Reynolds, & Fisher, 1999). Additional preliminary research on the reliability and validity of the RBFA variables and follow-up data indicates good reliability (Johnson & Fisher, in press).

In the univariate analyses, relationships between age, race/ethnicity, sources of income and educational level attained were all explored to determine if the findings reported in the literature were replicated using a population of out-of-treatment drug users. The variables considered to confer significant risk for acquisition of HIV and seroconversion included those drug use variables identified in the literature, including any injection drug use, sharing of needles and syringes, and frequency of injection of cocaine, heroin, and speedball (Chitwood et al., 1995; Fisher, Fenaughty, & Trubatch, 1998). Use of crack (smokable) cocaine was also included as it is considered a risk factor for HIV infection independent of injection drug use (Chaisson, et al., 1991). For the univariate analyses, *t*-tests and non parametric statistics such as the Wilcoxon Rank Sum test were used.

Multivariate logistic regression was used to determine factors predicting successful "transition to employment" using both baseline and follow-up data on employment status. For purposes of this study, unemployment was defined as no employment at all in the 30 days prior to interview. Employment was defined as any paid job (either full or part-

time), or receipt of income from salary or business, at any time in the 30 days before interview. Additional candidate independent variables included age, level of education attained, and race/ethnicity and were selected based on the results of the univariate analyses.

Results

A total of 3,622 participants completed the initial baseline interview from the three sites selected from the NIDA Cooperative Agreement. Of the total, 1,724 (48%) came from Tucson, 1,327 (37%) came from Anchorage, and the remainder (15%) came from Flagstaff (Table 1). Of the total, 550 (15%) were AI/ANs. Table 2 shows the breakdown by race/ethnicity for the combined participants from all three sites. The sample included 991 (27%) women and 2,631 (73%) men.

For the univariate comparisons, AI/ANs were combined into one group and all other race/ethnic groups were combined into another group called "non-Natives." For education, AI/ANs had a lower mean level of education than did non-Natives (z=6.55, p=.0001). AI/ANs (M=33.2, SD=8.12) were also found to be significantly younger than non-Natives (M=34.8, SD=8.3), t(3,621)=4.24, p=.0001.

Table 1
Study Participants by Site

Site	**Total Participants (N=3622)**	**Total of All Participants at Site Who Were AI/AN**
Anchorage, Alaska	1327	270
Flagstaff, Arizona	571	76
Tucson, Arizona	1724	204

Table 2
Distribution of Racial Groups, All Sites Combined (N=3622)

Race/Ethnicity	**Total**	**Percentage**
White, non-Hispanic	1323	37%
Hispanic	869	24%
Black, non-Hispanic	820	22%
AI/AN	550	15%
Asian/Pacific Islander	18	1%
Other	42	1%

In examining differences between sources of income reported at baseline for AI/ANs versus non-Natives, some differences were noted. Significant differences were noted for paid job or salary ($X^2(1, N= 3,617)=6.74$, $p=.009$) (see Figure 1) and on selling, bartering or trading goods ($X^2(1, N=3,618)=14.37$, $p=.001$) (see Figure 2). AI/ANs were less likely to have income from a job and they were more likely to report engaging in bartering or trading goods in the 30 days prior to interview. There were no significant differences between AI/ANs and non-Natives on the other sources of income for which information was elicited on the RBA, including welfare, Aid to Families with Dependent Children (AFDC) and food stamps; social security and disability; unemployment compensation; receiving money from family or friends; alimony or child support; illegal activities, excluding prostitution; and prostitution. At six-month follow-up, sources of income were again examined for differences between AI/ANs and non-Natives. The significant difference noted at baseline for having a paid job or salary was found again at follow-up. AI/ANs were again less likely to report this type of income ($X^2(1, N=1,325)=4.52$, $p=.03$). There was also a significant difference between AI/ANs and non-Natives at follow-up on having social security or disability as a source of income ($X^2(1, N=1,325)=5.73$, $p=.017$). See Figure 3. There was no difference at baseline on this type of income between the two groups.

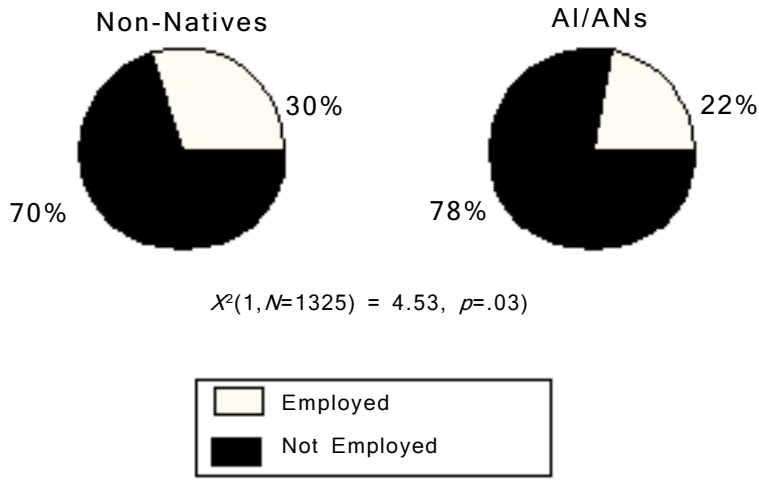
The difference noted at baseline on selling, trading, or bartering goods, as a source of income was not found at follow-up. The other remaining sources of income not significant at follow-up were receipt of welfare, AFDC and food stamps; unemployment compensation; income from spouse, family, or friend; selling, trading or bartering goods; alimony or child support; illegal activities; and prostitution.

HIV Risk Factors

At baseline, individuals who were employed had lower mean values on all of the risk factors associated with injection drug use (see Table 3). Those who were employed reported a lower mean number of times injecting any drug in the last 30 days, lower mean times sharing previously used needles and syringes, and lower mean days in the last month injecting cocaine, heroin, or speedball. They also reported fewer days using crack (smokable) cocaine compared to those who were unemployed.

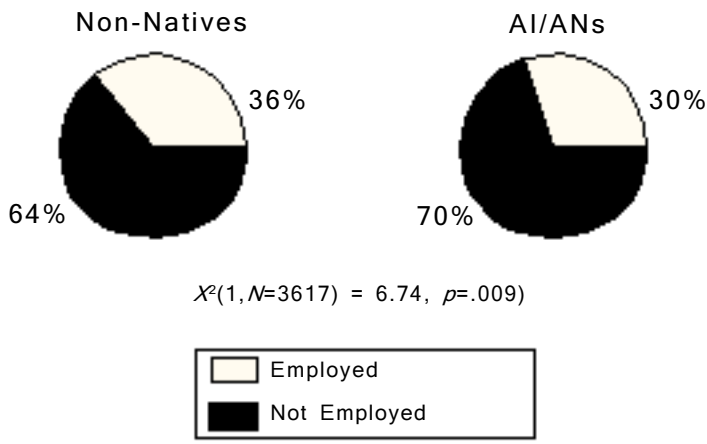
At follow-up, those individuals who transitioned from unemployment to employment had significantly lower mean 30 day times of injecting any drug and lower mean times injecting speedball compared to those who remained unemployed (see Table 4). Those who transitioned also had less crack (smokable) cocaine use in the 30 days prior to follow-up interview compared to those who did not transition to employment.

Figure 1
Paid Job at Baseline by Race



$X^2(1, N=1325) = 4.53, p=.03)$

Figure 2
Income From Selling or Bartering at Baseline



$X^2(1, N=3617) = 6.74, p=.009)$

Figure 3
Income From Social Security or Disability at Follow-Up

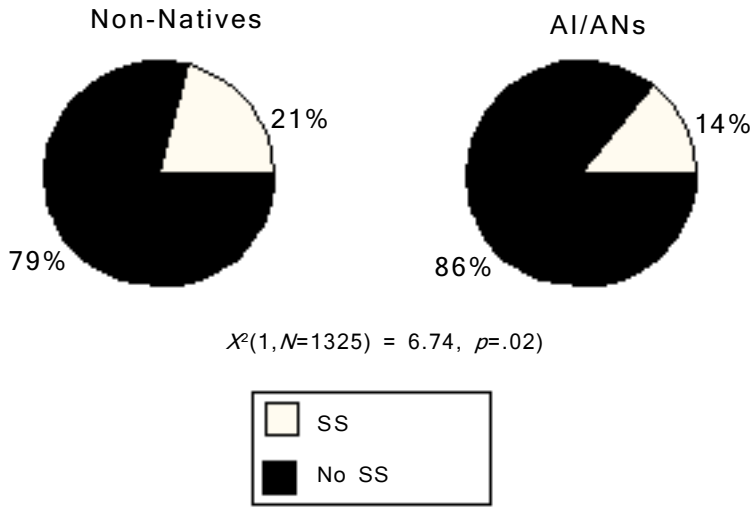


Table 3
HIV Infection Risk of Unemployed Compared to Employed Drug Users at Baseline

Risk Factor[a]	Unemployed *M* (*SD*) *n*	Employed *M* (*SD*) *n*	*t*
Times Injected	85.2 (102.9) 1500	64.9 (79.3) 497	4.0***
Days Used Crack	12.4 (10.1) 1860	10.9 (9.6) 692	3.3***
Times Shared Needles	32.5 (61.6) 887	23.3 (51.0) 279	2.3*
Times Injected Cocaine	45.8 (74.2) 1097	35.5 (54.2) 348	2.4**
Times Injected Heroin	55.6 (55.8) 1020	44.6 (40.7) 322	3.3**
Times Injected Speedball	29.4 (43.7) 638	21.9 (36.6) 197	2.2*

[a]Time referent last 30 days for all risk factors.

*p<.05. **p<.01. ***p<.001.

Transition to Employment

Individuals who "transitioned to employment" were found to be significantly younger (M=34.3, SD=7.6) than those who did not (M=36.3, SD=9.1), $t(1,323)=3.73$, $p=.0002$). Those who "transitioned to employment" were also found to have achieved a higher level of education as compared to those who did not ($X^2(7, N=1,324)=15.53$, $p=.03$).

Logistic regression was also used to predict "transition to employment" from baseline to follow-up. Only those individuals who were unemployed at baseline were included in the analysis (n=1,325). If participants reported unemployment at six-month follow-up, "transition" was coded as 0; if employment was reported at follow-up, "transition" was coded as 1. Figure 4 indicates how many individuals transitioned to employment for each of the groups. Thirty percent of non-Natives and 22.5% of AI/ANs who reported being unemployed at baseline had transitioned to work at follow-up. Table 5 presents a breakdown of the total number of individuals "transitioning to employment" at each of the three sites. A smaller percentage of unemployed participants at the Tucson site "transitioned to employment" (25%) than at the Flagstaff (40%) or Anchorage (30%) sites ($X^2(2, N=1,396)=15.87$, $p<.001$).

Table 6 presents the results of the logistic regression. One variable was significantly positively associated with transition to employment. This was the level of education completed. Two variables were protective factors against transition to employment. Age in ten-year increments was protective against transition to employment. That is, the older the participant, the less likely he/she was to transition from unemployment to employment. The strength of this protective factor increased with each decade of life. Being AI/AN was also a protective factor against transitioning to employment.

Discussion and Limitations

This study found that those out-of-treatment drug users who were employed at intake had lower drug-taking risk behaviors than those who reported being unemployed. In addition, those who were unemployed at baseline, but who had transitioned to employment by the time of their six-month follow-up interview, also had lower drug-taking behaviors than those who did not transition to employment. The study also found that AI/ANs were less likely to be employed at intake than other race/ethnic groups and were less likely to transition to employment if they were unemployed at baseline.

The difference between AI/ANs and non-Natives in transitioning to work, while statistically significant, did not indicate a large difference between the two groups (22% and 30%, respectively). This indicates that all drug users, not just the AI/ANs, have difficulty transitioning from unemployment

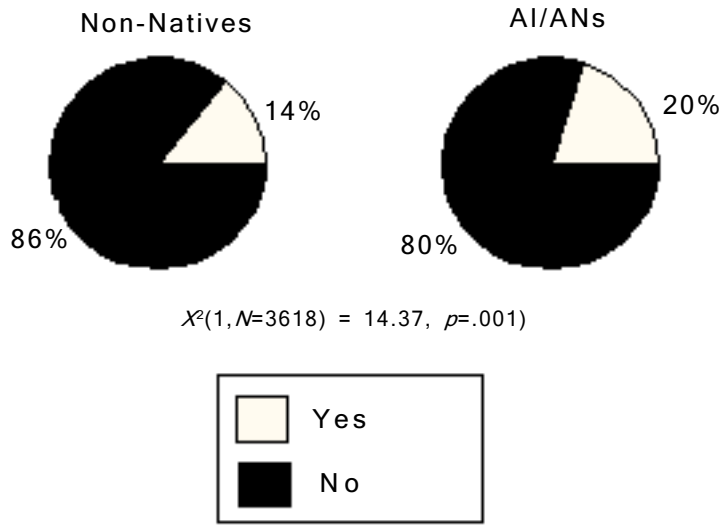
Table 4
HIV Risk Behavior of Unemployed Drug Users at Baseline Who Transitioned to Employment at Follow-Up Compared to Those Who Did Not

Risk Factor[a]	No Transition *M* (*SD*) *n*	Transition *M* (*SD*) *n*	*t*
Times Injected	74.2 (95.8) 417	52.1 (76.4) 126	2.4*
Days Used Crack	11.2 (10.3) 476	8.9 (8.4) 196	2.8**
Times Shared Needles	27.4 (54.5) 168	16.7 (28.3) 45	1.8
Times Injected Cocaine	37.2 (66.4) 289	25.8 (40.3) 79	1.9
Times Injected Heroin	51.8 (50.7) 291	40.8 (49.4) 89	1.8
Times Injected Speedball	29.3 (43.6) 174	16.9 (30.4) 42	2.1*

[a]Time referent last 30 days for all risk factors.

*$p<.05$. $p<.01$.

Figure 4
Transition to Employment by AI/AN versus Non-Native



$X^2(1, N=3618) = 14.37, p=.001)$

Table 5
Transition to Employment by Site

Transition to Employment	Anchorage	Flagstaff	Tucson
Yes	164 (30%)	62 (40%)	173 (25%)
No	380 (70%)	92 (60%)	525 (75%)

$X^2(2, N=1396)=15.87,\ p<.001$.

Table 6
Results of Logistic Regression Analysis Predicting Transition to Work

Variable	Parameter Estimate	Standard Error	Odds Ratio	CI 95%
Intercept	-.17	.29		
Education Level	.13	.04	1.14	1.06, 1.23

to employment. The fact that AI/AN drug users had lower educational levels than non-Natives has been reported elsewhere (Fisher, Cagle, & Wilson, 1993). Our results are consistent with these earlier findings.

Differences in drug risk and level of drug use between those reporting employment at baseline and those who did not, and between those who transitioned to employment during the course of the study and those who remained unemployed, show a clear pattern of less frequent injection drug use among those employed at either point in time. There is also a clear pattern of less crack (smokable) cocaine use among those reporting employment at either intake or follow-up. With respect to those variables not significant at follow-up (frequency of sharing, injecting cocaine and injecting heroin), there is nevertheless a clear pattern of reduced risk behavior among those reporting transition to employment (see Table 6).

It has been noted in the literature on unemployment and job-seeking behavior that there is a lack of research on individuals who have low educational attainment, including those with little or no training beyond high school and those with less than a high school education (Schmidt, Amel, & Ryan, 1993). The few studies that have used a minimally educated sample have found that these individuals differ from educated job seekers in respect to both attitudes and strategies (Schwab, Rynes, & Aldag, 1987). Further research is necessary, especially with the current climate of welfare reform, to determine the type of activities engaged in by the minimally educated to find employment.

One limitation of this study is our definition of employment. Those who were employed part-time were grouped with those employed full-time and data on these individuals were not analyzed to determine the extent to which those who were employed part-time at baseline achieved full-time employment at follow-up. We also limited unemployment to those who had no job. We did not distinguish between those who were unemployed and looking for work and those who were unemployed and not looking for work, though these may be separate groups. Further, individuals who were unemployed at both intake and follow-up, but who worked at some point during the six-month period between baseline interview and follow-up, would not be identified by our method.

The finding that those who have attained a higher level of education were most likely to transition to employment is consistent with other studies that have found that education leads to higher levels of employment. The finding that those who failed to "transition to employment" were older rather than younger is also consistent with other studies of substance abusers. It is likely that time spent involved in drug use limits opportunities for regular employment. This, in turn, limits an individual's work experience. In drug users therefore, the relationship between age and experience found in the general population is reversed.

It is not within the scope of this paper to address employment rates as they differ across sites, however, there was a significant difference in the proportion of participants who successfully transitioned to employment, with fewer than expected transitioning at the Tucson site. Local investigators may wish to address this difference by surveying such things as the local unemployment rate and services available to drug users to assist them to find a job.

In conclusion, AI/ANs may be at increased risk of HIV infection due to a combination of drug taking behaviors and unemployment. However, the relationship between drug use, race/ethnicity, educational level, and employment status is complex, and more research needs to be directed toward untangling the association between these factors. It has not been within the scope of this paper to consider the issue of gender within the context of HIV risk and unemployment, though there are differences in employment rates and patterns between male and female drug users (Cagle,

Fenaughty, Paschane, & Fisher, 1998). For further discussion of gender issues and HIV risk as they relate specifically to AI/ANs, the authors refer the reader to previously published work which has addressed these issues (Fenaughty, Fisher, Cagle, Stevens, Baldwin, & Booth, 1998; Fisher, Cagle, & Wilson, 1993).

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