

Risk Factors Associated with the Transition from Heroin Sniffing to Heroin Injection: A Street Addict Role Perspective

Jesús Sánchez, Dale D. Chitwood, and Dixie J. Koo

ABSTRACT *The purpose of this paper is to identify characteristics of heroin sniffers likely to shift to injection by evaluating the street addict role theory as an informing theoretical framework to explain transition from heroin sniffing to injection. A nested case-control research design was used to identify 142 heroin sniffers who never had injected a drug (controls) and 146 recently transitioned injection drug users (cases) from a larger study of 600 African-American, Hispanic, and non-Hispanic white men and women who were street recruited from multiple communities known for high drug use. Univariate and multivariate logistic regression analyses were conducted to test the proposed hypotheses derived from the street addict role theory. Our findings partially support the utility of the street addict role perspective as an explanatory framework for understanding the role played by sociocultural factors in the transition to injection. This perspective can help contextualize this HIV-related behavior within the high risk social environment of heroin users. The development of effective prevention strategies for this group should be guided by a comprehensive understanding of the social environment where HIV-related risk behaviors occur.*

KEYWORDS *Heroin sniffers, HIV/AIDS, Initiation to injection, Injecting drug use, Transition to injection.*

INTRODUCTION

Injection has been such a common and prominent route of heroin administration in the United States for much of the 20th century that heroin use often is equated with this route of administration.¹⁻³ Nevertheless, interest in the diversity of ways heroin is ingested has grown in recent decades.⁴⁻⁶ Injection and intranasal use, or sniffing, are the most prevalent routes of heroin use in the United States today. Some major metropolitan areas, such as New York, Philadelphia, Chicago, and Baltimore, have experienced an upsurge in the number of people who sniff heroin.⁷ While smoking and inhaling are the predominant forms of non-injected heroin use among heroin users in England and the Netherlands, in the United States these routes are somewhat uncommon.⁸

Users are likely to ingest heroin in multiple ways during their using careers. Such variations in the route of heroin administration have been characterized as a progressive continuum within which injection is the predictable final stage. Multiple

Sánchez is with the Department of Health Promotion and Disease Prevention, Robert Stempel School of Public Health, Florida International University, 11200 S.W. 8th Street—HLS574, Miami, Florida 33199, USA; Chitwood is with Department of Sociology, University of Miami, Coral Gables, Florida, USA; Koo is with the Department of Criminal Justice, California State University, Fullerton, USA.

Correspondence: Jesús Sánchez, PhD, Department of Health Promotion and Disease Prevention, Robert Stempel School of Public Health, Florida International University, 11200 S.W. 8th Street—HLS574, Miami, Florida 33199, USA. (E-mail: jesus.sanchez@fiu.edu)

investigators^{9,10} have reported that substantial proportions of the heroin injectors in their studies sniffed heroin prior to their first injection experience. The prevention of the transition to injection from other routes of heroin administration would be an ideal step in the public health campaign to reduce the transmission of viral pathogens that occurs during the use of non-sterile injection equipment.¹¹

This desire to reduce the transition to injection has begun to focus scientific interest upon persons who sniff heroin and the factors that may facilitate or impede a transition from heroin sniffing to heroin injection.^{9,12-17} The extant literature on transition is not as extensive as one might expect. The strongest investigations are primarily epidemiological in orientation and concentrate upon the identification of multiple risk factors associated with the transition to injection.^{9,14-19} Some factors are common across most studies while others are observed in only a few studies. A past history of injection and having a close relationship—in most cases a sexual partner—with injection drug users have been identified consistently as important risk factors for injection by a majority of studies.^{9,14-17} Number of years of heroin use, high frequency of heroin sniffing, and recent use of heroin have been documented as risk factors by several studies.^{14,15,17} A history of physical abuse has been documented as a risk factor by two studies.^{17,19} Unemployment,¹⁵ being tattooed,¹⁷ dropping out of high school,¹⁹ trading sex for drugs or money,¹⁹ being homeless,¹⁷ and having sniffed speedball⁹ have been recognized as potential risk factors as well. A history of drug treatment,⁹ exposure to an injection prevention program⁹ and being African-American¹⁹ were identified as protective factors by at least one study.

This paper takes a next step toward understanding the transition from sniffing to injection by developing a framework that can organize the epidemiologic data on risk factors into a more theoretically meaningful perspective. Findings from the available literature suggest that transition to injection is a complex phenomenon that may be a function of both personal and social factors.^{17,20} Our approach in this paper was guided by the street addict role theory advanced by Preble and Casey²¹ and developed and refined by Stephens,²² in which personal and social factors interact, predisposing individuals to, or protecting them from, initiating heroin use.^{2,22} This framework has been utilized by Stephens and McBride² to address the subject of initiation to heroin use and has demonstrated its viability in explaining some central aspects of the process of becoming a heroin addict. We seek to extend this perspective to help us examine the initial transition from heroin sniffing to heroin injection; therefore, it would be inaccurate to think of this paper as a test of Stephen's theory per se. Instead, the goal of this paper is to clarify to what extent the sociocultural framework utilized by Stephens in the street addict role theory can help explain transition from heroin sniffing to injection.

An important aspect of the street addict role theory is its focus on the sociocultural patterns of drug involvement, of which drug use is only a part, as contrasted to biomedical approaches that characterize heroin users as ill individuals who have no control of their lives. This theory maintains that heroin addicts are individuals who, in the context of their own personal needs, social structural positions and culture, follow the life of the street addict. This theoretical framework does not deny the importance of the physiological and pharmacological effects of heroin but goes beyond them to explain why heroin users become addicted.

The main theoretical tenet of the street addict role theory revolves around the idea that heroin addiction occurs in relatively well-defined subgroups and patterns as opposed to being a randomly distributed phenomenon. Members of this subculture share a set of distinguishable values, beliefs, norms, language, and symbols that

contribute to the development of defined behavioral patterns that result in the “street addict role.” Stephens indicates how the street addict role encompasses behavioral expectations shaped through a continuous interaction with other members of this subculture. Consequently, to comprehend the cultural dimension of heroin addiction, we need to move beyond individualistic explanations and understand the regularly predictable behavior of a group of individuals defined by their roles. From this perspective, addiction encompasses a commitment to a distinctive role. Occasional heroin users can be differentiated from heroin addicts as persons who have not reached that level of commitment, and heroin injection has been considered a final measure of involvement in the drug addict subculture.¹

Stephens also emphasizes that pre-existing cultural circumstances may facilitate the transition into the street addict role. As a result, the street addict role theory could be useful in identifying those heroin users whose cultural context makes them likely to become street addicts. If the street addict role theory can identify those heroin users who are more likely to become street addicts,^{2,3} the same predicting ability could be utilized in identifying those non-injecting heroin users who are more likely to transition to injection.

Following this rationale, we utilized the street addict role theory as an informing theoretical framework and assembled hypotheses that attempted to explain transition from sniffing to injection or, in other words, what personal and social factors prompt some heroin sniffers to become injectors.

We hypothesized that—in comparison with heroin sniffers—heroin injectors would be more likely to:

Hypothesis 1: *Have a history of greater involvement with the non-injected use of heroin.*

Although the street addict role theory favors a sociocultural explanation of heroin use and addiction over what Stephens calls “individualistic” explanations, it acknowledges the importance of several physiological aspects of heroin use such as tolerance, cross-tolerance, withdrawal, and physical addiction. Multiple researchers have examined the question of whether or not certain drugs act as a physiological reinforcement²⁴ or gateway to the different routes of heroin administration. In previous studies,^{9,14,17,18,25} duration and degree of involvement with the non-injected use of drugs were associated with the transition to injection drug use.

Hypothesis 2: *Hold a more favorable attitude toward injectors.*

Stephens²² points out that those who initiate heroin use already possess roles and a self-concept that are congruent with the street addict role. Persons with some of the traits and/or attitudes that characterize a street addict are more likely to initiate injection and become socialized into the role of a street addict. Therefore, it could be expected that those heroin sniffers who are about to transition to injection will possess roles and a self-concept that are congruent with those of a heroin injector. Existing research supports the argument that knowledge of and attitudes toward injection and the risk of AIDS are related to the transition to injection.^{26,27}

Hypothesis 3: *Feature a higher degree of social marginalization from basic social institutions as measured by residential stability, educational achievement, and marital status.*

Social integration into or marginalization from major institutions of a society, such as housing, education, and family, may influence whether transition to injection occurs. Stephens points out that the street addict role involves a rejection of middle

class values represented by the “square life” ideals of hard work, security, and honesty. The street addict lifestyle has an element of “contraculture.” The degree of social marginalization in the form of homelessness and lack of formal education, therefore, can be considered factors for initiation of injection that are supported by available research.^{15,17,18,28}

Hypothesis 4: *Belong to personal networks that feature a greater presence of drug injectors.*

The street addict role theory highlights the importance of personal networks. The influence exerted by the personal networks of a drug sniffer may be linked to the decision to start injecting. Wiebel²⁹ used in-depth interviews to study 20 new heroin users in the 1980s in Chicago. He found their early negative images of heroin use and injection had been eroded through close contact with heroin users. Similar findings are reported by Des Jarlais et al.,⁹ van Ameijden et al.,¹⁴ and Neaigus et al.,¹⁵ who observed that having close friends, drug use partners, and sexual partners who are injectors are factors in the transition from heroin sniffing to injecting. Irwin et al.²⁵ report a parallel finding among crack users. Although temporal ordering could not be established, crack users who became injectors were more likely to have had a sex partner who injected drugs. In a longitudinal study of the initiation of injection, Roy et al.¹⁷ reported that current affiliation with friends who inject drugs is a significant predictor for females.

Hypothesis 5: *Have a history of greater involvement in the heroin addict subculture or lifestyle as measured by their involvement in illegal activities, including participation in the trade/distribution of illegal substances.*

Stephens²² notes that once heroin users are immersed in the street addict subculture, hustling—the often illegal quest for the money to purchase drugs and to provide living expenses—becomes a major activity that dominates the life of a user. A sniffer’s degree of involvement in the heroin subculture or lifestyle is thought to be related to the transition to injection. Two main components of this lifestyle—a history of criminal activities and involvement in the distribution of illicit drugs—seem to be particularly relevant to the likelihood of transition to injection. The extant literature about this hypothesis is not substantial, although Sung and colleagues¹⁸ have reported that among a sample of incarcerated heroin users, two or more juvenile arrests was a risk factor for transition. Extensive, indirect supportive evidence of the strong relationship between drug use and criminal behaviors, including drug-related crime,^{21,30–34} also exists.

We have evaluated these five hypotheses by examining the association of injector status [previously transitioned IDUs (cases) vs. sniffers (controls)] with a set of independent variables integrated into six domains (demographics, drug use history, attitude towards injectors, social marginalization, personal networks, and lifestyle).

METHODOLOGY

This paper utilized a nested case–control design to select a sample of 288 participants, 142 recently transitioned injection drug users (cases) and 146 sniffers (controls), from a larger sample of 600 heroin users. A stratified network-based sample of 600 active heroin users was recruited from multiple communities in South

Florida that were known for high drug use. Non-Hispanic White, African-American, and Hispanic men and women were recruited from the streets of Miami-Dade County, Florida, between July 1997 and August 1999. Two groups of heroin users were recruited: (1) 300 injection drug users who had initiated injection within the last 4 years and who had injected heroin at least weekly for the previous 6 months and (2) 300 sniffers who never had injected a drug and had snorted heroin at least once a week for the previous 6 months. This study was approved by the IRB of the University of Miami and a Certificate of Confidentiality was obtained prior to the initiation of the study.

Definition and Selection of Cases & Controls

The cases for this study were selected from the sample of the 300 recently transitioned injection drug users (IDUs), and the controls were selected from the sample of the 300 sniffers. The heroin sniffers are comparable to recently transitioned IDUs and represent the population who would have been included as recently transitioned IDUs in the case-control design had they shifted to injection drug use.

Cases ($N = 142$)

Cases in this study were defined as the recently transitioned IDUs— injection drug users who had shifted from heroin sniffing to heroin injection during the past 4 years. Of the 300 injection drug users, 151 met eligibility criteria for cases. The average length of time that recently transitioned IDUs sniffed heroin prior to transition to injection was slightly less than 18 months. Seventy (46.4%) of the 151 recently transitioned IDUs began to inject less than 1 year after they started to sniff heroin, and 76.2% (115/151) had progressed to injection within 4 years. Our findings are similar to those reported by Des Jarlais et al.,⁹ van Ameijden et al.,¹⁴ and Neaigus et al.¹⁵ Nine of the 151 cases were removed from the sample because of missing information on key variables.

Controls ($N = 146$)

Controls in this study were defined as the heroin sniffers who had no history of injection and had been sniffing for less than 7 years. Of the 300 sniffers, 155 met eligibility criteria for controls. Sniffers who snorted heroin for seven or more years were deemed ineligible in order to keep the exposure to heroin sniffing comparable between both sniffers and short-term injectors. Due to missing data on key variables, nine sniffers were removed from the sample.

Enrollment and Data Collection

Ethnographic team recruitment techniques were used to characterize multiple geographic communities,³⁵ which permitted staff to introduce the project to heroin users in a variety of high drug use areas in Miami-Dade County. Outreach staff subsequently recruited within these communities through direct street contact with potential participants and by referral from a community member or study respondent. After informed consent was obtained, drug use status was established by interview, and a confirmatory urine screen using the Abuscreen ONTRAK Assay was performed to ensure that the participant was an active heroin user. Injection status was verified by physical examination by a phlebotomist for scarring or track marks. All study participants had to be at least 18 years of age.

The Modified AIDS Risk Behavior Questionnaire was administered to each participant by a trained interviewer in a private room. This instrument, which took approximately 1–1.5 h to complete, included data on socio-demographics, drug use history, drug use networks, sex history, and criminal justice history.^{10,36,37} Strict confidentiality was assured to all participants. After completion of the interview, HIV pre-test counselling was performed, and 10 ml of blood was drawn by venipuncture and tested for the presence of antibodies for HIV. A fee of \$25.00 was paid after the study protocols were completed. Participants were then transported back to the area from which they were recruited and were asked for referrals to other individuals for possible participation in the study. Participants subsequently returned to the assessment center for post-test counselling and were referred for care as appropriate.

Measurement

Risk Period For the purpose of this analysis, the time period of interest for sniffers (control group) was the last 30 days prior to interview. The time period of interest for recently transitioned IDUs (case group) was the last 30 days immediately prior to their shift from sniffing to first injection. Although comparable, the time frames utilized in the study imply that, in some cases, the social contexts described by study participants could be a few years apart. However, a profound knowledge of the social environments in which the study took place as well as the time period described by the study participants provide enough certainty as to the similarity of these time frames.

Independent Variables by Domains

Demographics Three demographic variables are employed as control variables in this analysis: gender, age (operationalized for sniffers as age at time of interview and for recently transitioned IDUs as age at time of first injection experience), and ethnicity.

Drug use history This domain includes two variables: self-reported frequency of non-injected heroin use in the last 30 days for sniffers and in the last 30 days prior to first injection for recently transitioned IDUs and money spent on drugs per week for the same 30 day risk period.

Attitude towards injectors was defined as a respondent's self-reported general opinion of injectors.

Social marginalization This domain is operationalized as three variables that reflect the degree to which a person is marginalized from major institutions of society: place of residence during the last 30 days for sniffers and last 30 days prior to first injection for recently transitioned IDUs, education, and marital status.

Personal networks This domain collected information about a respondent's group of relatives, peers, room/housemates, and acquaintances. Three variables represent this domain: proportion of friends/acquaintances who injected drugs during the 30

day risk period, having an injection sexual partner(s) during the risk period, and living with a drug injector during the risk period.

Lifestyle This domain was defined as self-reported involvement in a variety of criminal activities during the 30 day risk period. Four variables (handling heroin, burglary, petty theft, exchange of sex for money and/or drugs) represent this domain, and information on each of these behaviors during the 30 day risk period was collected.

Analytic Methodology

Univariate and multivariate analyses were conducted to test the proposed hypotheses. We present descriptive information about demographic, drug use history, attitudes towards injectors, social marginalization, personal networks, and lifestyle characteristics for sniffers and recently transitioned IDUs. Unadjusted odds ratios with 95% confidence intervals were calculated to compare and assess similarities/differences between cases and controls for each domain variable. A multivariate logistic regression model was developed to examine the independent effect of each domain variable as it related to being a recently transitioned IDU while controlling for all other variables. Adjusted odds ratios with 95% confidence intervals were calculated to facilitate interpretation of the relative magnitude of effects.

RESULTS

Of the 288 participants selected for this nested case-control study, two-thirds (68.4%) of the sample were male. The majority (85.4%) were 21 or older with almost half the sample (44.4%) at least 31 years of age. The ethnic make-up of the sample was 31.6% African-American, 33.7% non-Hispanic white, and 34.7% Hispanic/Latino. All persons used heroin at least weekly, and almost two-thirds (60.1%) were using heroin once a day or more. Over one-half of the participants (58.7%) lived in their own house or with relatives or friends, while 12.5% lived in a shelter, abandoned building, or on the street. Two-thirds of the sample (67.4%) had a high school diploma or GED.

Table 1 displays the results of the univariate analysis of differences between cases and controls on demographic, drug use history, attitudes toward injectors, social marginalization, personal networks, and lifestyle domain variables. One demographic control variable, age, was associated with injector status (for recently transitioned IDUs, "age" refers to the age at which the first injection experience occurred). Sniffers tended to be older (53.4% were ages 31 and older) than recently transitioned IDUs (35.2%). No significant differences were observed between cases and controls with respect to gender and ethnicity. Prior to initiating injection, recently transitioned IDUs were more likely than sniffers to use heroin on a daily basis (OR = 3.39); 75.4% of the IDUs and 45.2% of the sniffers were using heroin on a daily basis. The amount of money spent weekly on drugs during that time did not significantly differ between the case and control groups. Recently transitioned IDUs were less likely than the sniffers to hold neutral opinions about injectors (OR = 0.52), although cases and controls did not significantly differ on holding/having a positive opinion of injectors. Compared to the sniffers, a smaller proportion of the recently transitioned IDUs were living in their own house or with relatives and friends (71.9% vs. 45.1%) and these IDUs were more likely to be

TABLE 1. Characteristics by route of administration: unadjusted odds ratios

	Recently transitioned IDUs (N = 142)	Sniffers (N = 146)	OR	95% CI
	%	%		
Demographic control variables				
Gender				
Male	71.8	65.1	1.00	
Female	28.2	34.9	0.79	0.39–1.32
Age				
18–20	17.6	11.6	1.00	
21–30	47.2	34.9	0.83	0.44–1.67
31-older	35.2	53.5	0.46*	0.19–0.85
Ethnicity				
African-American	25.4	37.7	1.00	
Non-Hispanic White	36.6	30.8	1.71	0.90–2.86
Hispanic/Latino	38.0	31.5	1.81	0.92–3.14
Drug use history				
Heroin use				
Less than once a day	24.6	54.8	1.00	
Once a day or more	75.4	45.2	3.39***	2.08–5.81
Money spent on drugs a week				
\$175 or under	46.5	49.0	1.00	
\$176–\$350	32.4	26.9	0.84	0.53–1.68
\$351 or more	21.1	24.1	1.19	0.66–1.93
Attitude towards injectors				
Highly unfavorable/unfavorable	58.9	49.0	1.00	
Neither favorable nor unfavorable	34.8	49.0	0.52*	0.37–0.92
Favorable/highly favorable	6.3	2.0	2.38	0.67–8.28
Social marginalization				
Residence				
Own house/relatives/friends	45.1	71.9	1.00	
Hotel/motel/boarding house	35.9	21.9	2.51***	1.48–4.26
Shelter/abandoned building/street	19.0	6.2	4.71***	2.38–6.88
Education (HS/GED)				
No	31.0	34.2	1.00	
Yes	69.0	65.8	1.10	0.56–1.78
Marital status				
Single	43.0	50.0	1.00	
Married/Living with partner	31.7	33.6	1.03	0.60–1.82
Separated/divorced/widowed	25.3	16.4	1.58	0.91–2.89
Personal networks				
Percentage of acquaintances who inject drugs				
None	5.6	26.2	1.00	
Under 50%	64.1	52.4	4.23***	2.50–7.14
50% or more	30.3	21.4	5.06***	2.17–7.80
IDU sexual partner/s				
No	40.1	85.4	1.00	
Yes	59.9	14.6	6.53***	3.17–9.04

TABLE 1. *Continued*

	Recently transitioned IDUs (N = 142)	Sniffers (N = 146)	OR	95% CI
	%	%		
Live with IDU				
No	53.5	90.4	1.00	
Yes	46.5	9.6	5.94***	2.85–7.91
Lifestyle				
Handled heroin				
No	13.4	51.4	1.00	
Yes	86.6	48.6	5.14***	2.46–8.49
Burglary				
No	27.5	63.0	1.00	
Yes	72.5	37.0	4.60***	2.82–7.57
Petty theft				
No	49.3	84.9	1.00	
Yes	50.7	15.1	4.68***	3.36–7.03
Exchange of sex for drugs and/or money				
No	58.5	80.8	1.00	
Yes	41.5	19.2	3.02**	1.70–5.56

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

living in a shelter, abandoned building or on the street (OR = 4.71). All variables in the personal networks (% of acquaintances who inject drugs, IDU sexual partner, living with IDU) and lifestyle (handled heroin, burglary, petty theft, sex exchange for drugs and/or money) domains were associated with subsequent transition to injection. Recently transitioned IDUs were more likely than the sniffers to have acquaintances who injected drugs (under 50%: OR = 4.23; 50% or more: OR = 5.06), to have a sexual partner who injected drugs (OR = 6.53), and to live with an injection drug user (OR = 5.94). Engagement in various types of illicit and criminal behaviors also significantly differed between cases and controls. Recently transitioned IDUs were more likely than sniffers to have handled heroin (OR = 5.14), committed burglary (OR = 4.60) or petty theft (OR = 4.68), and exchanged sex for drugs and/or money (OR = 3.02).

Table 2 displays a multivariate logistic regression model to identify independent variables associated with injection status when all demographic, drug use history, attitude towards injectors, social marginalization, personal networks, and lifestyle domain variables were entered in the model. The results reveal a high degree of similarity with those obtained in the univariate analysis. Many variables that were significantly associated with shifting to injection in Table 1 remained significant when all variables were considered together. Demographic-control variables, gender and age, were significantly associated with case status. Compared to sniffers, recently transitioned IDUs were less likely to be female (OR = 0.22) and be 21 years of age or older (21–30 years: OR = 0.14; 31 and older: OR = 0.03).

Our findings do not demonstrate support for Hypotheses 1 and 2, which posited that involvement with the non-injected use of heroin and favorable attitudes towards injectors would be greater among recently transitioned IDUs versus the sniffers.

TABLE 2. Multivariate logistic regression model: factors associated with being a recently transitioned IDU (N = 288)

	OR	95% CI
Demographic control variables		
Gender		
Female	0.22*	0.05–0.92
Age		
18–20	1.00	
21–30	0.14**	0.03–0.57
31-older	0.03***	0.01–0.15
Ethnicity		
African-American	1.00	
Non-Hispanic White	0.46	0.12–1.73
Hispanic/Latino	1.31	0.35–4.84
Drug use history		
Heroin use		
Less than once a day	1.00	
Once a day or more	2.07	0.74–5.82
Money spent on drugs a week		
\$175 or under	1.00	
\$176–\$350	1.49	0.41–5.46
\$351 or more	0.82	0.24–2.83
Attitude towards injectors		
Highly unfavorable/unfavorable	1.00	
Neither favorable nor unfavorable	0.73	0.48–1.66
Favorable/highly favorable	0.42	0.03–6.79
Social marginalization		
Residence		
Own house/relatives/friends	1.00	
Hotel/motel/boarding house	3.36**	1.08–5.49
Shelter/abandoned building/street	6.26**	1.29–9.35
Education (HS/GED)		
No	1.00	
Yes	1.60	0.50–5.10
Marital status		
Single	1.00	
Married/Living with partner	2.02	0.61–6.69
Separated/divorced/widowed	3.06*	1.29–6.40
Personal networks		
Percentage of acquaintances who inject drugs		
None	1.00	
Under 50%	2.69**	2.06–4.58
50% or more	3.10*	1.16–5.03
IDU sexual partner/s		
No	1.00	
Yes	5.47***	2.32–7.47
Live with IDU		
No	1.00	
Yes	2.65***	1.51–8.63
Lifestyle		
Handled heroin		
No	1.00	
Yes	2.62***	1.95–7.22

TABLE 2. *Continued*

	OR	95% CI
Burglary		
No	1.00	
Yes	2.24**	1.51–7.89
Petty theft		
No	1.00	
Yes	3.31***	2.17–8.33
Exchange of sex for drugs and/or money		
No	1.00	
Yes	4.17***	2.23–10.02

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

None of the variables from the drug use history and attitude towards injectors domains were associated with injector status after controlling for other variables.

Our analysis does find support for Hypothesis 3: In comparison with sniffers, recently transitioned IDUs featured a higher degree of social marginalization from major social institutions. Two of the three social marginalization domain variables (residence and marital status) were associated with being a recently transitioned IDU. We found that recently transitioned IDUs were substantially more likely than sniffers to reside in unstable types of residences, such as a hotel, motel, or boarding house (OR = 3.36) and a shelter, abandoned building, or on the street (OR = 6.26), and were more likely to be separated, divorced, or widowed (OR = 3.05).

We also find support for Hypotheses 4 and 5. All personal networks (% of acquaintances who inject drugs, IDU sexual partners, live with IDU) and lifestyle (handled heroin, burglary, other petty theft, sex exchange for drugs and/or money) domain variables remained significantly associated with injector status and appeared to operate as risk factors in the multivariate model. Compared to the sniffers, recently transitioned IDUs belonged to networks that featured a greater presence of drug injectors. Their networks were more likely to include people who injected drugs (under 50%: OR = 2.69; 50% or more: OR = 3.10), had a sexual partner who is an injector (OR = 5.47), and lived with an injection drug user (OR = 2.65). All lifestyle domain factors under consideration also significantly differed between cases and controls. Recently transitioned IDUs compared to the sniffers reported greater involvement in the lifestyle/roles of the heroin addict subculture. IDUs were substantially more likely to engage in illicit and criminal activities such as handling heroin (OR = 2.62), committing burglary (OR = 2.24) or petty theft (OR = 3.31), and exchanging sex for drugs and/or money (OR = 4.17).

DISCUSSION

The purpose of this study was to assess to what extent the street addict role theory²² could help explain the progression from heroin sniffing to injection. Our results partially support the utility of the street addict role perspective as an explanatory framework for understanding transition. The three predominantly social domains we derived from the theory (social marginalization, personal networks, and lifestyle) have utility for differentiating heroin sniffers who subsequently shifted to injection (recently transitioned IDUs) from other sniffers who did not initiate injection.

We found that recently transitioned IDUs were considerably more likely to reside in marginal housing situations and to have lost a partner through separation, divorce, or death prior to their transition to injection. Social marginalization can loosen ties to and minimize roles in major institutions of society that might be otherwise protective against transition.^{15,17,18,28} The influence exerted by the personal network of a heroin sniffer is strongly linked to transition. Heroin sniffers who subsequently shifted to injection had a greater degree of exposure to personal networks that included heroin injectors. We observed this for acquaintances of sniffers, for persons with whom they lived, and for their sex partners. Knowing people who are injectors, living with an injector, and having a sexual relationship with an injector are strong risk factors for transition to heroin injection. Several studies make similar observations in support of our findings.^{9,14,15,17,25,29,38}

The degree of involvement in the heroin user subculture or lifestyle also was related to transition to injection. We observed that involvement in two major components of this lifestyle, participation in the distribution of illicit drugs and in multiple other economically linked criminal activities, was considerably more common among recently transitioned IDUs. Sniffers who progressed to heroin injection manifested characteristics of the street addict lifestyle prior to their transition to injection. These recently transitioned IDUs were already immersed in the core components of the street addict role, drug trade involvement and illicit activities, and “taking care of business.” Involvement in the activities and lifestyle of the street addict role appear to be markers for transitioning among heroin sniffers. The contextual nature of transitioning to heroin injection is an important aspect to focus upon when examining this phenomenon.

The two more individualistic domains (H1, H2) that derived from the street addict role perspective, frequency of non-injected heroin use and attitudes towards injectors, did not appear to impact the transition to injection. Although a significant univariate relationship was observed between frequency of sniffing heroin and transition, it was not sustained when the multivariate model was examined. Since other studies have observed this relationship,^{9,14,18,25} caution should be used when this finding is considered.

Transition from sniffing to injection entails more than individualistic physiological responses to heroin and an associated pressure to shift to a more efficient route of administration. These are important elements, but transition to injection is a more complex phenomenon.¹⁷ Elements of the street addict role perspective provide a means for a contextual understanding of when heroin sniffers are at increased risk for transition to injection. The processes associated with the initiation of injection do not differ in nature from the processes that facilitate other types of drug-related behavior. The first injection experience is a product of opportunity and curiosity facilitated by the social support of other injectors. Neaigus et al.³⁸ found that among a sample of injectors, 65% reported being helped by another injector when he/she injected for the first time, 68% reported being helped by a friend, and 6% were helped by a sibling. The shift to injection is made easier when the lifestyle of a sniffer includes roles and attributes that are similar to those of injectors. Multi-stranded relationships of sniffers with injectors, who can be their acquaintances, housemates, relatives, or other intimate partners, create a milieu and a familiarity with the lifestyle of injectors that reduce barriers to the transition to injection.

These findings should be tempered with some limitations of this study. Our respondents were recruited through street networks and cannot be generalized to

other drug users. Participants were recruited across multiple neighborhoods in South Florida and recruited during both daytime and evening hours in an effort to increase the representativeness of the sample. These data are self-reported and subject to recall bias. Our trained interviewers used the calendar approach, anchoring time periods to important events such as birthdays in order to minimize recall problems for the recently transitioned IDUs. Current and retrospective self-reporting of high risk behaviors have been shown to be valid and reliable in drug using populations.^{39–41} Misclassification errors are a constant threat in case-control studies. This study employed a rigorous screening protocol, which included urine tests for the presence of heroin and cocaine, physical examination for track marks by a phlebotomist, and consistency of self-report with staff knowledge of street behavior to maximize the accuracy of classification. The cross-sectional nature of any case-control study implies that information on all variables is collected at the same time, and while we can establish association between some of the independent variables and transition to heroin injection, we cannot determine causation.

CONCLUSION

Illicit drug injection is a major component of the AIDS epidemic. The prevention of drug injection would be the ideal point for reducing HIV infection and AIDS among illicit drug injectors.²⁶ The tremendous social cost of a renewing, continuous pool of persons who transition to injection is self-evident. Restricting the transmission of HIV by preventing heroin sniffers from initiating injection is a viable approach that requires the development of appropriate prevention strategies specifically tailored to this group. The National Institutes of Health 2006 Plan for HIV-Related Research highlights the importance of developing a comprehensive understanding of the social environments where individual-level risk behaviors occur. An increasing number of scholars now recognize⁴² that effective prevention strategies must incorporate a comprehensive understanding of the contextual factors that affect HIV-related risk behaviors. Such interventions should incorporate strategies to reintegrate drug users into major social institutions by strengthening meaningful roles such as parent, partner, or worker. The street addict role theory provides a framework to contextualize a particular HIV-related behavior, transition from heroin sniffing to heroin injection, within the high risk social environment of heroin sniffers. This perspective is useful in understanding the contribution that specific drug using environments and social roles make in the social structural production of HIV risk associated with heroin use.

ACKNOWLEDGEMENT

This research was funded by grant RO1-DA10655 from the National Institute on Drug Abuse. (Dale D. Chitwood, Principal Investigator).

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