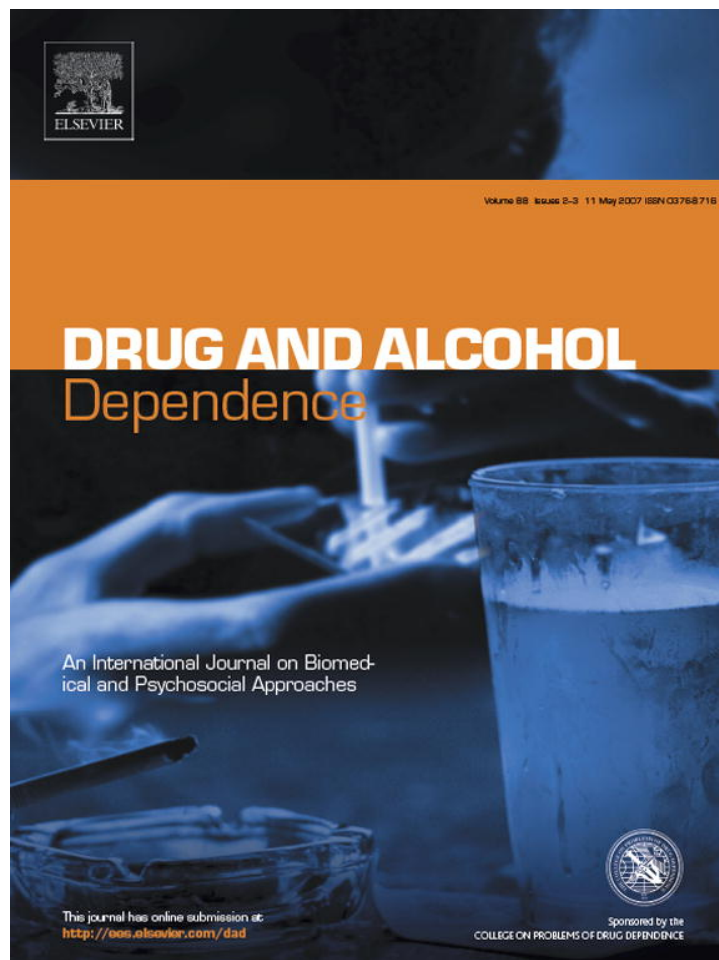


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Stigma, discrimination and the health of illicit drug users

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Received 10 July 2006; received in revised form 18 October 2006; accepted 18 October 2006

Abstract

Persons who use illicit drugs are stigmatized in the United States. The conferral of a deviant social status on illicit drug users may serve to discourage use. However, stigmatization may also adversely affect the health of those who use illicit drugs, through exposure to chronic stress such as discrimination and as a barrier to accessing care. We hypothesized that aspects of stigma and discrimination would be associated with mental and physical health among illicit drug users. Using street outreach techniques, 1008 illicit drug users were interviewed about stigma and discrimination related to their drug use, and their health. We measured discrimination related to drug use, alienation, perceived devaluation, and responses to discrimination and stigma. Health measures included mental and physical health measures from the Medical Outcomes Study Short Form-36, depression symptoms from the Center for Epidemiological Studies Depression scale, and a sum of health conditions. In adjusted models, discrimination and alienation were both associated with poorer mental health, and only discrimination was associated with poorer physical health. Angry responses to discrimination and stigma were associated with poorer mental health. The association of stigma and discrimination with poor health among drug users suggests the need for debate on the relative risks and benefits of stigma and discrimination in this context.

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Keywords: Stigma; Discrimination; Health; Drug users

1. Introduction

1.1. Stigma and discrimination among illicit drug users and health

To varying degrees, persons who use cigarettes, alcohol, and illicit drugs currently experience stigmatization in the United States, although illicit drug users are stigmatized to the greatest extent (Kallen, 1989). Among illicit drugs, not all are equally stigmatized. Use of drugs such as powder cocaine by the wealthy is often seen as a display of status, while use of heroin or crack cocaine, particularly among those who are poor or otherwise marginalized, is more stigmatized (Jones et al., 1984). The conferral of a deviant social status on illicit drug users may serve to discourage illicit drug use and the social ills that accompany the behavior. However, the stigmatization of illicit drug use may

also adversely affect the health of those who use drugs in at least two ways.

Stigmatization may have a direct detrimental influence on mental and physical health stemming from exposure to chronic stress including experiences of discrimination (Krieger, 1999; Link et al., 1997; Minior et al., 2003; Young et al., 2005). Rejection by others and expectations of rejection may cause chronic stress and may lead to coping approaches that involve withdrawal and isolation, further harming mental wellbeing (Link et al., 1997). The level of stigma perceived by illicit drug users has been shown to persist even when drug use is reduced or ended, and remains strongly associated with mental health symptoms (Link et al., 1997). Ultimately, the persistent stress experienced from stigmatization and discrimination may influence physical health through hypothalamic-pituitary-adrenal axis and neuroendocrine processes (Taylor et al., 1997; Tsigos and Chrousos, 2002).

Stigmatization may also discourage illicit drug users from getting health care due to fear of poor treatment by health care providers or fear of trouble with the authorities (Cunningham et al., 1993; Link et al., 1997). Stigma has been identified as

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an important barrier to substance use, mental health, and general health care in many communities (e.g., HIV/AIDS positive, minorities) (Calsyn et al., 2004; Ojeda and McGuire, 2006; Reif et al., 2005). Research suggests that when they do seek care, substance users often experience discrimination in the health care setting and receive lesser quality care (Miller et al., 2001). Moreover, substance users may attempt to hide their drug use, the issue for which they may have the greatest need of care, in the health care setting (Kurtz et al., 2005). Thus as a barrier to care, stigma and discrimination may adversely affect both mental health and physical health by impeding entry into the health care system, reducing accurate reporting of health issues, and lowering the quality of care received.

While research on the health effects of stigmatization and discrimination among illicit drug users is nascent, there is a burgeoning literature on these topics, particularly discrimination, for other marginalized groups including racial and ethnic minorities, persons with HIV/AIDS, homosexuals, and persons with mental illness (Brown, 1993; Corrigan et al., 2004; Finch et al., 2000; Gyll et al., 2001; James et al., 1984; Kessler et al., 1999; Krieger and Sidney, 1996; Ren et al., 1999; Stuber et al., 2003; Surlis and Hyde, 2001; Williams, 1997). We draw on these literatures in our conceptualization of the elements of stigma and discrimination that may affect the health of illicit drug users.

1.2. *Illicit drug use stigma*

Stigma, a concept introduced by Goffman, has been defined in a variety of ways over the past decades (Goffman, 1963). To frame stigmatization of drug use, we used a definition of stigma that encompasses behavior: “a characteristic of persons that is contrary to a norm of a social unit” where a norm is defined as a “shared belief that a person ought to behave in certain ways at a certain time” (Stafford and Scott, 1986). In this case, the characteristic is being an illicit drug user situated within a social context where drug use is frowned upon. Stigma is both a social process perpetrated by non-marginalized groups to achieve goals of exclusion and conformity, and a psychosocial process that marginalized groups must navigate and contend with. We are concerned with how drug users process stigmatized perceptions, experiences and interactions. The broader literature on social stigmatization delineates many possible responses to stigmatization. We distinguish two forms of stigma in relation to illicit drug use, which we label perceived devaluation and alienation (Link et al., 1997; Ritsher et al., 2003). Societal norms in the United States cast drug use as an unacceptable behavior, so many hold negative opinions about people who use drugs. Illicit drug users are seen as weak, immoral, and as causing a risk to society (Kallen, 1989). Perceived devaluation occurs when illicit drug users think that most people believe common negative stereotypes about drug users (Link et al., 1997). In contrast, alienation refers to the internalization of the views expressed in those stereotypes that drug users are marginal members of society (Ritsher et al., 2003). These two elements of stigma may be steps in a process through which illicit drug users to turn negative societal atti-

tudes inward and to adopt negative self-characterizations (Link, 1987).

1.3. *Illicit drug use discrimination*

In addition to the burdens of stigmatization, those who use illicit drugs experience discrimination. In the United States, drug use is illegal and has been increasingly dealt with as a criminal problem rather than a health problem that could be prevented and treated (Conyers et al., 2003). There are certainly no protections afforded illicit drug users in areas such as housing or employment. Experiences of discrimination can range from major exclusions to put-downs and slights (Krieger, 1999). Drawing on the literature, we define drug use discrimination as experiences of rejection and unequal treatment attributed to drug use (Krieger, 1999; Link et al., 1997).

1.4. *Responses to stigma and discrimination*

When illicit drug users face stigma and discrimination, like other marginalized groups they may respond in ways that may either exacerbate or mitigate these stressors. There are emotional responses, psychological attributes and behavioral strategies of stigmatized individuals that may lessen or exacerbate the effects of stigma and discrimination (Crocker and Major, 1989). For example, speaking out against stigma and discrimination may in certain contexts mitigate stigma. Not all responses to contend with stigma and discrimination are constructive. Feelings such as anger, strategies to conceal one's drug using status, or withdrawal from social interactions may be ineffective in mitigating and may exacerbate the effects of stigma and discrimination on health (Link et al., 1997).

1.5. *Study hypotheses*

Perceived devaluation, alienation, and experiences of discrimination represent a matrix of different dimensions of stress plausibly experienced by illicit drug users. In this study we examined the association of each of these dimensions with standard measures of physical and mental health. We hypothesized that perceived devaluation, alienation and discrimination would each be associated with poorer mental and physical health. Further, we hypothesized that when the stigma and discrimination measures were examined together, each would maintain an independent association with physical and mental health so that their combined effects would be greater than their individual effects. Finally, we hypothesized that constructive responses to stigma and discrimination would be associated with better mental and physical health while unconstructive responses will be associated with poorer mental and physical health.

This is one of the first studies to examine the associations of both stigma and discrimination with the health of illicit drug users. Despite the essential link between the constructs of stigma and discrimination, extant research has rarely examined their associations with health simultaneously (Meyer, 1995). Moreover, because perceived devaluation and alienation are both based on the perspective of the stigmatized individual,

the distinction between the two is typically overlooked. Thus, examining these three constructs together may give new insight into their relative and combined associations with health.

2. Methods

2.1. Sample

Study participants were recruited from the New York City neighborhoods of East Harlem, Central Harlem, and the South Bronx. Persons 18 years of age or older who reported using cocaine, crack, or heroin in the past 2 months were eligible for participation. We recruited participants using street outreach techniques between August 2000 and January 2001. Outreach workers approached drug users on the street, placed advertisements in service agencies, and distributed pamphlets to interested persons; enrolled participants referred potential new participants to the study office. Prior success with these recruitment methods suggests they are effective and valid when working with drug users (Diaz et al., 2001a,b; Galea et al., 2002). Participants completed confidential, structured, in-person interviews approximately 45 min in length in either English or Spanish. Following the interview, participants were provided with counseling and referrals as necessary as well as \$15 compensation for their time. The study protocol was approved by the Institutional Review Board of the New York Academy of Medicine.

2.2. Stigma and discrimination measures

We used questionnaire items capturing the domains of perceived devaluation, alienation, discrimination, and responses to discrimination and stigma found in the literatures assessing the health effects of these stressors in other marginalized populations including racial and ethnic minorities, the mentally ill, and homosexuals (Krieger, 1990; Link et al., 1997; Meyer, 1995; Ritsher et al., 2003). Modification of these items was necessary to frame them in terms of illicit drug use. Separate factor analyses were conducted on each group of items as we had designated them as part of specific domains a priori based on the literature (Posner et al., 2003). We specified a varimax orthogonal factor rotation for the factor analyses (Kaiser, 1958; Tabachnick and Fidell, 1996). The eigenvalues (one factor ≥ 1) and inspection of the scree plots (clear bend after the first factor) demonstrated that within each of the four conceptual domains the items were loading on one factor, suggesting each of our conceptually based groups of items indeed captured one latent construct (Tabachnick and Fidell, 1996). Items with a factor loadings of 0.32 or greater, which reflects at least 10% overlapping variance, were retained as part of each scale (Comrey and Lee, 1992). For perceived devaluation, five items were considered in the factor analysis, and three were retained based on the factor analysis results (retained factor loadings 0.47–0.63). For alienation, five items were considered and three were retained based on the factor loadings (retained factor loadings 0.55–0.63). Among the discrimination items, five items were considered and four were retained based on the factor loadings (retained factor loadings 0.38–0.64). Nine items were considered for responses to discrimination and six were retained (retained factor loadings 0.39–0.58). The included items for all of the scales are detailed in Table 2, and the items excluded due to low factor loadings are listed in the table footnotes. For each scale, Cronbach's alpha statistic was used to assess the reliability of the retained items. We created four scales by summing responses of the items within each domain and standardizing the responses for each scale to the range of 0–10 to allow comparison of the effects of the scales across models.

2.3. Health measures

Health measures in this study included standardized scales from the Medical Outcomes Study Short Form 36 scale (SF-36) (Falck et al., 2000; McHorney et al., 1993; Ware and Sherbourne, 1992), the Center for Epidemiological Studies Depression scale (CES-D) (Radloff, 1977; Roberts and Vernon, 1983), and a sum of self-reported health conditions from the Nutrition Examination Survey Epidemiologic follow-up study (Idler and Angel, 1990; Idler et al., 2000). The SF-36 scale includes eight subscales of overall physical and mental health in the past 4 weeks. Following standard practices, we created an overall scale

of mental wellbeing (mental component score; MCS) and an overall scale of physical wellbeing (physical component score; PCS). The average MCS and PCS scores for the United States are both 50 with every 10 points representing one standard deviation (Ware et al., 1994). The possible range of scores is 0–100 with higher scores on all scales of the SF-36 indicating better health (Ware et al., 1994). The CES-D includes 20 symptoms of depression and asks about their frequency in the prior week. We summed the items to create a continuous scale of depressive symptoms, with a possible range of 0–60. Higher values indicate higher levels of depressive symptoms and values over 16 have been associated with clinical depression (Weissman et al., 1977). The health conditions scale included a list of 14 conditions (e.g., headaches or migraines, heart problems) and the option to specify another condition. A sum of health conditions ever experienced was created; those with five or more conditions were classified as having five to reduce the potential influence of outliers and improve the normality of the outcome distribution (range of 0–5).

2.4. Confounders

To properly evaluate the associations between perceived devaluation and alienation, discrimination and health it is important to control for factors that may confound these relations. Demographic and socioeconomic characteristics such as race/ethnicity or income level may be associated with the amount of stigma and discrimination due to drug use experienced and may independently predict health. Frequency of drug use is another potential confounder as it may be associated with the amount of discrimination and stigma experienced and may independently affect health (Cunningham et al., 1993). An overall measure of drug use frequency was created by summing measures of cocaine sniffing, crack smoking, heroin sniffing and drug injection in the prior 2 months. Social support and social networks also may be associated with experiences of discrimination and stigma and independently affect health among drug users. Those who experience more stigma and discrimination may have a broader social network and more supports, possibly built up to counteract these experiences of discrimination, which if unaccounted for, might reduce the apparent negative association of stigma and discrimination on health. Alternatively, those experiencing more discrimination may have fewer social supports which would increase the apparent effect of discrimination on health. Social support was assessed with a seven item scale from the HIV Epidemiology Research Study (e.g., someone who could take care of you if you were sick in bed for several weeks, someone to talk to if you were upset, nervous or depressed) (Schuman et al., 2001). We summed the seven items to create a social support scale, with a range of 0–7 where higher values represent more social support. The measure of social networks included the number of close relatives and the number of close friends reported by the respondent. A sum of friends and relatives created a scale with a range of 0–8 with higher values representing a larger social network.

2.5. Analysis plan

In the analysis, we described the study population using frequencies and percentages for categorical variables and means and standard deviations for continuous variables. Collinearity among the perceived devaluation, alienation, discrimination and response scales was assessed using Pearson's correlation coefficients. Linear regression models were constructed to first assess separate associations of perceived devaluation, alienation, discrimination with the four physical and mental health scales. We then examined the relation between the health outcomes and the combined effects of perceived devaluation, alienation, and discrimination. Final models were adjusted for age, race/ethnicity, gender, income, education, social support, social networks, and drug use frequency. In a separate analysis, we examined the associations between the responses to stigma and discrimination and the four health outcomes. Because the responses were qualitatively different from one another we created indicator variables for the responses "Talk about it to friends or family", "Talk about it with the person who was mistreating you", "Try to avoid being in that situation again", "Try to educate other people about drug use" and "Become angry". Those who did not report any of these responses, or reported "I did nothing" served as the reference group in these analyses. The first four indicator variables were considered constructive responses and are therefore expected to be associated with better health. Anger was considered an unconstructive coping strategy and was expected to be associated with worse health.

3. Results

We recruited 1008 drug users for participation in the study. Over 70% of respondents were between 35 and 54 years old, and 64% were male. The sample was predominantly of minority race/ethnicity with 50% African American and 42% Latino respondents. Approximately half of respondents had completed high school (51%) and over 70% earned \$10,000 or less in the past year. All respondents had used drugs in the prior 2 months, with 62% reporting sniffing cocaine, 67% smoking crack, 63% sniffing heroin, and 46% using an injection drug. The average measure of drug use frequency was 37 times per month (standard deviation (S.D.) = 27.5). The mean value of the social support scale was 5.0 (S.D. = 2.2) and the mean value for the social network scale was 2.9 (S.D. = 2.0). The mean mental component score was 40.2 (S.D. = 12.0) and the mean depression symptom score was 24.7 (S.D. = 12.8). In terms of physical health, the mean physical component score was 45.1 (S.D. = 11.3) and the average number of health conditions was 2.0 (S.D. = 1.4). All of the outcome measures were normally distributed. Table 1 provides a full description of the sample.

Perceived devaluation was prevalent with 85% of respondents reporting that most people think someone who uses drugs is unreliable, and a similar percent (84.5%) reporting that most people think drug users are dangerous (Table 2). Alienation due to illicit drug use was also common, as reflected by 74% of respondents reporting that they sometimes avoided people because they might be looked down upon for using drugs. Respondents reported a high frequency of discrimination due to drug use. The most common types of discrimination experienced were attributed to family (75.2%) and friends (65.8%). Coping responses to discrimination and stigma were varied, with 45% of respondents reporting talking about it with friends or family, 41% reporting trying to avoid such situations, and 44% reporting becoming angry.

The correlations among the four stigma and discrimination scales were all significant ($p < 0.001$) but not particularly strong. The strongest correlation of 0.46 was between the discrimination and the alienation scales while correlations among the other scales were all below 0.2.

In linear regression models, we examined each stigma and discrimination scale separately, and then examined all three scales together in association with each of the mental and physical health outcomes (Table 3). Parameter estimates (betas), significance levels and R^2 values are presented for five sets of linear regression models: columns 1 through 3 show the associations of each discrimination and stigma scale separately with the mental and physical health outcomes, column 4 shows all three stigma and discrimination scales in combination, and column 5 shows combined associations of the scales after controlling for the confounding variables. Discrimination and alienation had significant independent associations with the two mental health outcomes as indicated by the significant betas in the models in column 4. Additional variance in the outcomes was explained when these scales were both included in the model, in comparison to when they were examined separately (columns 1 and 2). For example, the R^2 was 0.14 in the model with all three scales

Table 1
Sample description

Characteristic	<i>N</i>	%
Total	1008	100.0
Age		
18–24	45	4.5
25–34	182	18.2
35–44	435	43.5
45–54	306	30.6
55+	31	3.1
Gender		
Male	639	63.9
Female	347	34.7
Transgender/other	14	1.4
Race		
White	39	3.9
African American	500	49.8
Latino	419	41.7
Other	47	4.7
Education		
Less than high school/GED	493	48.9
High school grad/GED	515	51.1
Income past year		
Up to \$5000	334	35.9
\$5001–10,000	322	34.6
\$10,001–15,000	117	12.6
\$15,001–20,000	91	9.8
>\$20,000	66	7.1
Sniffed cocaine last 2 months	624	62.3
Smoked crack last 2 months	668	66.5
Sniffed heroin last 2 months	635	63.2
Injected drugs last 2 months	458	45.9
Characteristic	Mean	S.D.
Drug use frequency	37.2	27.5
Social support scale	5.0	2.2
Social networks scale	2.9	2.0
Overall mental health (SF-36)	40.2	12.0
Depression symptoms (CES-D)	24.7	12.8
Overall physical health (SF-36)	45.1	11.3
Health conditions scale	2.0	1.4

predicting overall mental health (column 4), while the R^2 values were 0.10 and 0.10, respectively in models with only discrimination (column 1) and only alienation (column 2). The associations were somewhat reduced in magnitude but remained significant after adjustment for confounding (column 5). In contrast, only discrimination had a significant independent association with the two physical health outcomes.

To illustrate the magnitude of the associations between alienation, discrimination, and health, we used the models in which all three stressors were examined in association with general mental health and general physical health as examples. Based on the final adjusted model (column 5), those with the highest discrimination score (value of 10) scored 6.1 points lower on average on the general mental health scale than those who reported no discrimination (value of 0) ($\beta = -0.61$, $p < 0.001$). Those with the highest levels of alienation (value of 10) scored 5.9 points lower on average on the general mental health scale

Table 2
Discrimination, alienation, perceived devaluation and coping response scales: items, reported prevalence, and reliability

Stigma and discrimination scales	N (yes/agree)	% (yes/agree)
Discrimination^a		
Did some of your friends reject you because you use drugs?	626	65.8
Did some of your family reject you because you use drugs?	712	75.2
Have you been prevented from obtaining medical care because you use drugs?	223	23.5
Have you not gotten housing because other people know you use drugs?	308	33.5
Cronbach's alpha = 0.61		
Alienation^b		
Do you sometimes avoid people because you think they might look down on you because you use drugs?	703	73.8
Do you feel you have to prove yourself because you use drugs?	548	57.6
Do you feel ashamed you use drugs?	648	68.4
Cronbach's alpha = 0.66		
Perceived devaluation^c		
Most people believe that someone who uses drugs is dangerous	803	84.5
Most people think that someone who uses drugs is not a good person	727	76.5
Most people think that someone who uses drugs is unreliable	806	84.9
Cronbach's alpha = 0.64		
Coping response^d		
When you were prevented from doing something because you use drugs, which of the following did you do? Did you...		
Talk about it to friends or family	456	45.2
Talk about it to the person who was mistreating you	171	17
Try to avoid being in that situation again	409	40.6
Try to educate other people about drug use	310	30.8
Become angry	444	44.1
I did nothing ^e	104	10.3
Cronbach's alpha = 0.67		

^a Item excluded due to low factor loading was "I was never prevented from doing something because I use drugs".

^b Items excluded due to low factor loadings were "Would you suggest to a relative who uses drugs that they not tell anyone about it?", "Would you try to get a job if you knew they would ask if you use drugs?".

^c Items excluded due to low factor loadings were "Most people believe that someone who uses drugs can be trusted", "Most people think that someone who uses drugs is as intelligent as the average person".

^d Items excluded due to low factor loadings were "Talk about it to a lawyer", "Talk about it to the police", "Talk about it to a clergy person".

^e Reverse coded for scale creation.

than those with no alienation (value of 0) ($\beta = -0.59, p < 0.001$). Examining the final adjusted model predicting the general physical health measure, those with the highest discrimination score (value of 10) scored 5.9 points lower on average on the general physical health measure than those who reported no discrimination (value of 0) ($\beta = -0.59, p < 0.001$).

Because the scale measuring responses to discrimination and stigma due to illicit drug use included a wide variety of response types, we conducted a separate analysis in which we separated the response items and examined them as indicator variables in association with each health outcome (Table 4). In adjusted models, becoming angry was associated with poorer mental health as measured by the general mental health scale. An angry response was also associated with more depressive symptoms as measured by the CES-D scale. Talking with friends or family about experiences of discrimination was associated poorer physical health as measured by the overall physical health scale. Avoiding the situation was associated with more reported health conditions.

4. Discussion

We set out to study the associations of stigma and discrimination with the physical and mental health of illicit drug users by specifying and testing hypotheses related to a stress processes. The results partially supported our hypotheses, showing that some discrimination and stigma measures were associated separately and in combination with poorer mental and physical health. Alienation (i.e., internalization of the belief that drug users are marginal members of society) and experiences of discrimination were independently associated with poorer mental health. Only discrimination was associated with poorer physical health. Perceived devaluation (i.e., the belief that most people endorse common negative stereotypes about drug users) was not significantly associated with poorer mental or physical health when the scales were examined in combination. Contrary to expectations, some of the responses to stigma and discrimination we delineated as constructive (talking with friends and family, avoiding the situation) turned out to be associated with worse physical health. Becoming angry, as anticipated, was associated with poorer mental health.

There are several limitations to consider in the interpretation of these findings. First, this study is cross-sectional and temporality cannot be established when predictors and outcomes are assessed simultaneously. A plausible alternative explanation is that the relations are reversed—that poorer mental and physical health increases perceptions of stigma and discrimination related to drug use. We assessed lifetime experiences of discrimination while most health measures were assessed for the month or week before the interview (with the exception of health conditions), somewhat mitigating this concern. Second, our discrimination and stigma scales and health outcomes were self-reported, leading to the possibility that respondents in poorer mental health may be more likely to attribute negative interactions to discrimination or stigma, while those in better mental health may be less likely to report discrimination or stigma. However, there is longitudinal evidence that perceptions of discrimination and stigma are independent of health symptoms among drug users

Table 3
Multivariate linear regression models including perceived devaluation, alienation and discrimination^a

	(1)		(2)		(3)		(4)		(5)	
	Beta	S.E.	Beta	S.E.	Beta	S.E.	Beta	S.E.	Beta ^a	S.E.
Overall mental health (SF-36)										
Discrimination	-1.21***	0.13					-0.84***	0.15	-0.61***	0.15
Alienation			-1.03***	0.11			-0.70***	0.13	-0.59***	0.13
Perceived devaluation					-0.45**	0.15	-0.25	0.14	-0.26	0.14
Adjusted R ²	0.10		0.10		0.01		0.14		0.21	
Depression										
Discrimination	1.51***	0.15					1.08***	0.16	0.83***	0.15
Alienation			1.22***	0.12			0.82***	0.14	0.64***	0.13
Perceived devaluation					0.14	0.17	-0.05	0.15	-0.02	0.15
Adjusted R ²	0.14		0.12		0.00		0.18		0.27	
Overall physical health (SF-36)										
Discrimination	-0.47***	0.14					-0.48**	0.15	-0.59****	0.15
Alienation			-0.19	0.12			-0.05	0.13	0.01	0.13
Perceived devaluation					0.02	0.02	0.05	0.15	-0.04	0.14
Adjusted R ²	0.02		0.00		0.00		0.01		0.11	
Health conditions										
Discrimination	0.06***	0.02					0.06**	0.02	0.07***	0.02
Alienation			0.04*	0.01			0.01	0.02	0.01	0.02
Perceived devaluation					0.02	0.02	0.02	0.02	0.02	0.02
Adjusted R ²	0.02		0.01		0.00		0.02		0.08	

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

^a Parameter estimates (betas), significance levels and R² values are presented for five sets of linear regression models: columns 1 through 3 show the associations of each discrimination and stigma scale separately with the mental and physical health outcomes, column 4 shows all three stigma and discrimination scales in combination, and column 5 shows combined associations of the scales after controlling for the confounding variables. Models in column 5 also adjusted for age, race/ethnicity, gender, income, education, social support, social networks, drug use frequency.

Table 4
Coping responses to drug use stigma and discrimination together in bivariate and multivariate linear regression models predicting mental and physical health outcomes

Response to discrimination ^a	Mental health				Physical health			
	Overall mental health (SF-36)				Overall physical health (SF-36)			
	Beta	S.E.	Beta ^b	S.E.	Beta	S.E.	Beta ^b	S.E.
Talk to friends or family	-0.39	0.89	-1.36	0.84	-3.51***	0.84	-3.70***	0.82
Talk to person who was mistreating you	0.90	1.17	0.12	1.11	-0.07	1.11	-0.12	1.07
Avoid the situation	0.60	0.99	0.03	0.94	1.62	0.95	1.30	0.91
Educate people	0.52	1.02	0.31	0.97	-0.72	0.97	-0.35	0.94
Become angry	-3.00**	0.94	-2.91**	0.89	1.63	0.9	1.18	0.86
Response to discrimination ^a	Depression				Sum of health conditions			
	Beta	S.E.	Beta ^b	S.E.	Beta	S.E.	Beta ^b	S.E.
	Talk to friends or family	-0.04	0.99	1.04	0.91	0.13	0.11	0.13
Talk to person who was mistreating you	-0.87	1.31	0.03	1.2	0.21	0.14	0.19	0.14
Avoid the situation	-0.33	1.11	0.26	1.02	0.21	0.12	0.25*	0.12
Educate people	0.08	1.15	0.23	1.05	-0.01	0.12	-0.05	0.12
Become angry	2.76**	1.05	2.46*	0.96	0.05	0.11	0.11	0.11

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

^a Reference group for response to discrimination are those who did not report any of these responses, or reported doing nothing.

^b Parameters adjusted for age, race/ethnicity, gender, income, education, social support, social networks, frequency of drug use.

(Link et al., 1997) suggesting this is not a likely explanation of our findings. Third, research suggests that the levels of stigma and discrimination may vary by the types of drugs used (Jones et al., 1984). As the vast majority of our participants used more than one of the drugs about which we inquired (73% had used cocaine, crack and heroin in their lifetimes), we were unable to examine whether levels of stigma and their associations with health varied by drug type. Fourth, the four outcomes studied cannot be considered entirely independent as the health scales are correlated, particularly the mental health and depression symptom scales. However, we considered the two scales within each health domain (mental and physical) general indicators of health in that area rather than completely independent outcomes, and present findings for both outcomes in each domain as evidence that the results are not sensitive to the exact health scale that is examined. Finally, our study included current drug users who were mostly of minority race/ethnicity and had low income. Additional research is needed to determine how well these findings apply to stigma and discrimination experienced in a broader population of drug users.

Few studies have examined the effects of stigma and discrimination on the health of illicit drug users. Link et al. examined the association between discrimination and depression among 84 predominantly minority dual-diagnosis men who completed 1 year of a treatment program for drug or alcohol abuse and psychiatric problems in New York City (Link et al., 1997). Generally, discrimination experiences related to drug use were less common in their study than in our study (Link et al., 1997). These differences may reflect differences in the study populations; their study included dual-diagnosis men who completed a year of a treatment program, while our sample was a broader population of street-recruited drug users. Drug users who are able to complete a year long treatment program may experience less discrimination than the general population of drug users. Drug users who experience more discrimination may be more likely to drop out of treatment or those in treatment may experience less discrimination because of their efforts to rehabilitate. Moreover, those with dual-diagnosis may attribute some discrimination to their mental illness rather than to their drug use. In addition, we have previously shown that illicit drug users are exposed to discrimination due to multiple stigmatized statuses besides their drug use including poverty, race, age sex and sexual orientation, but that discrimination due to drug use was reported as the type of discrimination having the greatest impact on respondents' lives (Minior et al., 2003; Young et al., 2005).

Perhaps the reason there has been so little prior work on stigma and discrimination in the illicit drug using population is because stigma and discrimination are believed to deter drug use, so it is assumed that any negative effects of stigma and discrimination are trivial in comparison to this potential benefit. This study suggests that we should not disregard potential negative effects of stigma and discrimination on drug users. The magnitude of the association between discrimination and alienation and the mental and physical health of drug users was substantial. For example, consider the magnitude of the association between the discrimination scale and the measures of overall mental and

physical health. Every point on the overall mental and physical health scales corresponds to a difference of 0.1 standard deviation in the scale (McHorney et al., 1993; Ware and Sherbourne, 1992). The observed differences of 6.1 points in the overall mental health scale and 5.9 points in the overall physical health scale due to discrimination correspond to differences of more than half a standard deviation. Moreover, the average levels of health measures suggest that the population overall is in poor health, so factors contributing to further declines may be more detrimental than they would in a healthier population (e.g., the average of 40 on the overall mental health score (SF-36) is one standard deviation lower than the national average of 50 (Ware et al., 1994)). Other research has documented that HIV/AIDS stigmatization is experienced most acutely by injection drug users, discouraging treatment and disclosure among these individuals (Surlis and Hyde, 2001). It is possible that perceived stigma and discrimination experienced by illicit drug users poses a barrier to drug treatment similar to the ways in which these stressors have been shown to deter treatment seeking for mental illness and other illness such as HIV/AIDS (Brown, 1993; Corrigan et al., 2004). Taken together, these findings call into question the idea that the deterrence effect of stigma and discrimination in this context outweighs the potential negative effects. Future research should examine the potential risks and benefits of stigma and discrimination, especially in light of the high prevalence of stigma and discrimination reported by the illicit drug users in this study.

We found strong associations between discrimination and measures of poorer physical and mental health. Similarly, Link et al. found that a sum of different discrimination experiences (e.g., rejection by friends or family, treated unfairly by people) were associated with symptoms of depression; their study did not measure physical health outcomes, precluding comparison with our study in that respect (Link et al., 1997). However, our findings are consistent with studies that have found associations between discrimination due to race/ethnicity and poor mental and physical health (Finch et al., 2000; Gyll et al., 2001; James et al., 1984; Kessler et al., 1999; Krieger, 1990; Krieger and Sidney, 1996; Ren et al., 1999; Stuber et al., 2003; Williams, 1997). Ren et al. examined the effects of discrimination due to race and socioeconomic status on the GH and MH scales of the SF-36, and the CES-D scale (Ren et al., 1999). Discrimination in their study was measured with a sum of different discrimination experiences (e.g., at school, at work), making their measure comparable to our measure discrimination. They found that measures of discrimination in any setting due to race and socioeconomic status were consistently associated with poorer physical and mental health in adjusted models.

In our analysis, alienation was associated with poorer mental health even after adjustment for perceived devaluation, discrimination and for confounding factors. One item from a scale examined by Link et al. measures an element of alienation, namely, "Do you sometimes avoid people because you think they might look down on people who have had a drug problem?" (Link et al., 1997) While the overall scale was associated with depression, this alienation item was not examined separately. This stress domain is frequently overlooked in the broader

literatures on the health effects of stigma and discrimination for marginalized groups. This study suggests that alienation is related, but distinct, from experiences of discrimination. Alienation may represent a chronic source of stress stemming from the internalization of negative perceptions about one's social group. Future studies of stigma and discrimination, not only among illicit drug users but also in other marginalized groups should consider including this stress domain.

Our analysis did not reveal associations between perceived devaluation and the mental or physical health of drug users. This result was surprising in light of research in other marginalized populations showing a strong relation between this construct and deleterious health outcomes (Jackson et al., 1996; Meyer, 1995). Perceived devaluation taps into the stereotyping aspect of stigmatization, providing an assessment by drug users of what undesirable characteristics are associated with their group according to the dominant culture (e.g., being dangerous, being unreliable). Although we are not aware of other such research among illicit drug users using a comparable measure, Jackson et al. explored a similar concept using the National Survey of Black Americans (Jackson et al., 1996). They examined the association between blacks' opinions about whether "whites want to keep blacks down" and several health outcomes. Although there were some inconsistencies in their findings, they found that blacks' beliefs about whites' desire to oppress them was associated with health disability, psychiatric distress, lower life satisfaction and unhappiness (Jackson et al., 1996). Our findings suggest that in the context of drug use stigma, the perception that drug users are devalued is less important for health than whether a drug user has internalized those attitudes, as reflected in the alienation measure. Perceived devaluation may be a more salient when the stigmatized attribute that is the source of this stress is innate or a more permanent part of the identity of the marginalized group such as is the case for racial/ethnic minorities and gay, lesbian and bisexual persons. The stigmatized social status of illicit drug users in comparison to these groups is more transient. It is not an identity that is imposed at birth nor is it unchangeable.

While the importance of examining specific responses to discrimination has been emphasized by some, there has been little research in this area (Williams and Williams-Morris, 2000). Link et al. examined this issue and found no association between withdrawal and secrecy coping methods and symptoms of depression, but they did not examine other coping styles (Link et al., 1997). Our findings may suggest that angry responses to discrimination detrimentally influence mental health, or conversely that participants respond with anger after more severe discrimination incidents which subsequently have a stronger association with mental health. Somewhat surprisingly, talking with friends and family about experiences of discrimination due to drug use was negatively associated with overall physical health. Discussions with family and friends about discrimination related to drug use may lead to negative reactions. In addition, the decision to discuss an experience of discrimination may suggest a more severe incident of discrimination or a more severe reaction to the discrimination. None of the specific responses to discrimination examined were significantly associated with better mental or physical health.

5. Conclusion

Using theoretically based measures of stigma and discrimination due to illicit drug use, we found that marginalized drug users not only experience high levels of stigma and discrimination, but that these experiences are multi-faceted and are associated with poorer mental and physical health. Studies that include only one measure of discrimination or stigma may be underestimating the importance of this source of stress for the health of illicit drug users.

Undoubtedly, the increasing criminalization of drug use has resulted in an increase in negative attitudes towards persons who use illicit drugs (Burris, 2002; Conyers et al., 2003). While stigma and discrimination may serve as deterrents to illicit drug use, these attitudes also contribute to discrimination and stigmatization experienced by illicit drug users. Our study suggests that this may be bad for drug user's health. Ultimately, stigmatization and discrimination are tools used by societies to deter unwanted behaviors such as illicit drug use. However the association of stigma and discrimination with the poor health among drug users is a cause for concern in a population that suffers from myriad health problems and has limited access to health care. Open policy debate is needed to address the relative risks and benefits of stigma and discrimination in this context.

Acknowledgements

This work was funded by grant DA14219-02S1 and DA 017642 from the National Institute on Drug Abuse, Cooperative Agreement R18-CCR22983-01 from the Centers for Disease Control and Prevention, and by a grant from The Robert Wood Johnson Foundation. We would like to thank Dr. Bruce Link for assisting with instrument development for this study, Drs. David Vlahov and Stephanie Factor for their role in the establishment of this study.

References

- Brown, L., 1993. Enrollment of drug abusers in HIV clinical trials: a public health imperative for communities of color. *J. Psychoactive Drugs* 25, 45–52.
- Burris, S., 2002. Disease stigma in U.S. public health law. *J. Law Med. Ethics* 30, 179–190.
- Calsyn, R., Klinkenberg, W., Morse, G., Miller, J., Cruthis, R., 2004. Recruitment, engagement and retention of people living with HIV and co-occurring mental health and substance use disorders. *AIDS Care* 16, S56–S70.
- Comrey, A., Lee, H., 1992. *A First Course in Factor Analysis*. Erlbaum, Hillsdale.
- Conyers, J., Nadler, J., Scott, R.C., Lee, S.J., Delahunt, W.D., Baldwin, T., Sanchez, L.T., 2003. Minority views to HR2086, the "office of national drug control policy reauthorization act of 2003". Accessed on February 21, 2006. http://www.house.gov/judiciary_democrats/hr2086minviews108cong.pdf.
- Corrigan, P., Markowitz, F., Watson, A., 2004. Structural levels of mental illness stigma and discrimination. *Schizophr. Bull.* 30, 481–491.
- Crocker, J., Major, B., 1989. Social stigma and self-esteem: the self-protective properties of stigma. *Psychol. Rev.* 96, 608–630.
- Cunningham, J.A., Sobell, L.C., Chow, V.M., 1993. What's in a label? The effects of substance types and labels on treatment considerations and stigma. *J. Stud. Alcohol* 54, 693–699.
- Diaz, R.M., Ayala, G., Bein, E., Henne, J., Marin, B.V., 2001a. The impact of homophobia, poverty, and racism on the mental health of gay and

- bisexual Latino men: findings from 3 US cities. *Am. J. Public Health* 91, 927–932.
- Diaz, T., Des Jarlais, D.C., Vlahov, D., Perlis, T.E., Edwards, V., Friedman, S.R., Rockwell, R., Hoover, D., Williams, I.T., Monterroso, E.R., 2001b. Factors associated with prevalent hepatitis C: differences among young adult injection drug users in lower and upper Manhattan, New York City. *Am. J. Public Health* 91, 23–30.
- Falck, R., Wang, J., Siegal, H., Carlson, R., 2000. Longitudinal application of the Medical Outcomes Study 36-item short form health survey with not-in-treatment crack-cocaine users. *Med. Care* 38, 902–910.
- Finch, B.K., Kolody, B., Vega, W.A., 2000. Perceived discrimination and depression among Mexican-origin adults in California. *J. Health Soc. Behav.* 41, 295–313.
- Galea, S., Factor, S., Palermo, A.G., Aaron, D., Canales, E., Vlahov, D., 2002. Access to resources for substance users in Harlem, New York City: service provider and client perspectives. *Health Educ. Behav.* 29, 296–311.
- Goffman, E., 1963. *Stigma: Notes on the Management of a Spoiled Identity*. Prentice-Hall, Englewood Cliffs.
- Guyll, M., Matthews, K.A., Bromberger, J.T., 2001. Discrimination and unfair treatment: relationship to cardiovascular reactivity among African American and European American women. *Health Psychol.* 20, 315–325.
- Idler, E., Angel, R., 1990. Self-rated health and mortality in the NHANES-I epidemiologic follow-up study. *Am. J. Public Health* 80, 446–452.
- Idler, E., Russell, L., Davis, D., 2000. Survival, functional limitations, and self-rated health in the NHANES I epidemiologic follow-up study. *Am. J. Epidemiol.* 152, 874–883.
- Jackson, J.S., Brown, T.N., Williams, D.R., Torres, M., Sellers, S.L., Brown, K., 1996. Racism and the physical and mental health status of African Americans: a thirteen year national panel study. *Ethn. Dis.* 6, 132–147.
- James, S.A., LaCroix, A.Z., Kleinbaum, D.G., Strogatz, D.S., 1984. John Henryism and blood pressure differences among black men. II. The role of occupational stressors. *J. Behav. Med.* 7, 259–275.
- Jones, E.E., Farina, A., Hastorf, A.H., Markus, H., Miller, D.T., Scott, R.A., French, R.D.S., 1984. *Social Stigma: The Psychology of Marked Relationships*. W. H. Freeman and Company, New York.
- Kaiser, H.F., 1958. The varimax criterion for analytic rotation in factor analysis. *Psychometrika* 23, 187–200.
- Kallen, E., 1989. *Label Me Human: Minority Rights of Stigmatized Canadians*. University of Toronto Press, Toronto.
- Kessler, R.C., Mickelson, K.D., Williams, D.R., 1999. The prevalence, distribution, and mental health correlates of perceived discrimination in the United States. *J. Health Soc. Behav.* 40, 208–230.
- Krieger, N., 1990. Racial and gender discrimination: risk factors for high blood pressure? *Soc. Sci. Med.* 30, 1273–1281.
- Krieger, N., 1999. Embodying inequality: a review of concepts, measures, and methods for studying health consequences of discrimination. *Int. J. Health Serv.* 29, 295–352.
- Krieger, N., Sidney, S., 1996. Racial discrimination and blood pressure: the CARDIA study of young black and white adults. *Am. J. Public Health* 86, 1370–1378.
- Kurtz, S.P., Surratt, H.L., Kiley, M.C., Inciardi, J.A., 2005. Barriers to health and social services for street-based sex workers. *J. Health Care Poor Underserved* 16, 345–361.
- Link, B.G., 1987. Understanding labeling effects in the area of mental disorders: an assessment of the effects of expectations of rejection. *Am. Sociol. Rev.* 52, 96–112.
- Link, B.G., Struening, E.L., Rahav, M., Phelan, J.C., Nuttbrock, L., 1997. On stigma and its consequences: evidence from a longitudinal study of men with dual diagnoses of mental illness and substance abuse. *J. Health Soc. Behav.* 38, 177–190.
- McHorney, C., Ware, J., Raczek, A., 1993. The MOS 36-Item Short-Form Health Survey (SF-36). II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. *Med. Care* 31, 247–263.
- Meyer, I., 1995. Minority stress and mental health in gay men. *J. Health Soc. Behav.* 36, 38–56.
- Miller, N., Sheppard, L., Colenda, C., Magen, J., 2001. Why physicians are unprepared to treat patients who have alcohol- and drug-related disorders. *Acad. Med.* 76, 410–418.
- Minior, T., Galea, S., Stuber, J., Ahern, J., Ompad, D., 2003. Racial differences in discrimination experiences and responses among minority substance users. *Ethn. Dis.* 13, 521–527.
- Ojeda, V., McGuire, T., 2006. Gender and racial/ethnic differences in use of outpatient mental health and substance use services by depressed adults. *Psychiatr. Quart.* 77, 211–222.
- Posner, S.F., Pulley, L., Artz, L., Macaluson, M., 2003. Use of psychometric techniques in the analysis of epidemiologic data. *Ann. Epidemiol.* 13, 344–350.
- Radloff, L., 1977. The CES-D scale: a self-report depression scale for research in the general population. *Appl. Psychol. Measure.* 1, 385–401.
- Reif, S., Golin, C., Smith, S., 2005. Barriers to accessing HIV/AIDS care in North Carolina: rural and urban differences. *AIDS Care* 17, 558–565.
- Ren, X.S., Amick, B.C., Williams, D.R., 1999. Racial/ethnic disparities in health: the interplay between discrimination and socioeconomic status. *Ethn. Dis.* 9, 151–165.
- Ritsher, J.B., Otilingam, P.G., Grajales, M., 2003. Internalized stigma of mental illness: psychometric properties of a new measure. *Psychiatry Res.* 121, 31–49.
- Roberts, R., Vernon, S., 1983. The center for epidemiological studies depression scale: its use in a community sample. *Am. J. Psychiatry* 140, 41–46.
- Schuman, P., Ohmit, S., Moore, J., Schoenbaum, E., Boland, R., Rompalo, A., Solomon, L., HERS Group: Human Immunodeficiency Virus Epidemiology Research Study, 2001. Perceived need for and use of mental health services by women living with or at risk of human immunodeficiency virus infection. *J. Am. Med. Womens Assoc.* 56, 4–8.
- Stafford, M., Scott, R., 1986. Stigma deviance and social control: some conceptual issues. In: Ainlay, S., Becker, G., Coleman, L. (Eds.), *The Dilemma of Difference*. Plenum, New York.
- Stuber, J., Galea, S., Ahern, J., Blaney, S., Fuller, C., 2003. The association between multiple domains of discrimination and self-assessed health: a multilevel analysis of Latinos and blacks in four low-income New York City neighborhoods. *Health Serv. Res.* 38, 1735–1759.
- Surlis, S., Hyde, A., 2001. HIV-positive patients' experiences of stigma during hospitalization. *J. Assoc. Nurses AIDS Care* 12, 68–77.
- Tabachnick, B.G., Fidell, L.S., 1996. *Using Multivariate Statistics*. Harper Collins, New York.
- Taylor, S.E., Repetti, R.L., Seeman, T., 1997. Health psychology: what is an unhealthy environment and how does it get under the skin? *Ann. Rev. Psychol.* 48, 411–447.
- Tsigos, C., Chrousos, G.P., 2002. Hypothalamic-pituitary-adrenal axis, neuroendocrine factors and stress. *J. Psychosom. Res.* 53, 865–871.
- Ware, J., Kosinski, M., Keller, S., 1994. SF36: Physical and Mental Summary Scales: A User's Manual. The Health Institute, New England Medical Center, Boston.
- Ware, J., Sherbourne, C., 1992. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Med. Care* 30, 473–483.
- Weissman, M., Sholamkas, D., Pottenger, M., Prusoff, B., Locke, B., 1977. Assessing depressive symptoms in five psychiatric populations: a validation study. *Am. J. Epidemiol.* 106, 203–214.
- Williams, D.R., 1997. Race and health: basic questions, emerging directions. *Ann. Epidemiol.* 7, 322–333.
- Williams, D.R., Williams-Morris, R., 2000. Racism and mental health: the African American experience. *Ethn. Dis.* 5, 243–268.
- Young, M., Stuber, J., Ahern, J., Galea, S., 2005. Interpersonal discrimination and the health of illicit drug users. *Am. J. Drug Alcohol Abuse* 31, 371–391.