Original Article

Journal of Drug Issues
2024, Vol. 0(0) 1–20

DOI: 10.1177/00220426241287125
journals.sagepub.com/home/jod
Sage

"I Always Stay at My Friends' Place": How Peer Association Explains the Link Between Social Deprivation and Methamphetamine Use Intensity

Xiaozhao Y. Yang[1] and Brian C. Kelly[2,3]

Abstract

This study incorporates peer salience and peer pressure in explaining why people experiencing social deprivation tend to use drugs in greater intensity. A total of 303 current methamphetamine users were recruited through respondent-driven sampling in Changsha, China. We constructed a deprivation indicator by socioeconomic levels and marginal statuses. We employed structural equation modeling to test the mediating roles of peer salience and peer pressure on the deprivation-drug association. We also conducted a qualitative discourse analysis (n = 40) to triangulate and support the findings from quantitative analyses. We found social deprivation is indirectly associated with greater methamphetamine use through the full mediation of peer salience and peer pressure. Qualitative results indicate socially disadvantaged respondents often referred to peer groups as a paramount source of support in their lives. Policies may provide formal platforms of social support and economic mobility to interrupt the mechanisms that contribute to methamphetamine use.

Keywords

methamphetamine, peer effect, social deprivation, mixed methods

Introduction

Methamphetamine became a popular recreational drug as early as the 1960s, but by the turn of the 21st century tended to be characterized by poverty and rurality. Like many other illicit substances,

[1]Department of Sociology and Social Work, Sun Yat-sen University, Guangzhou, China
[2]Department of Sociology, Indiana University. Bloomington, IN, USA
[3]Department of Sociology and Anthropology, Purdue University, West Lafayette, IN, USA

Corresponding Author:
Brian C. Kelly, Department of Sociology and Anthropology, Purdue University, West Lafayette, IN 47906, USA.
Email: bckelly@purdue.edu

the early use of methamphetamine, before the 1950s, was intended for medicinal and functional utilities by physicians and the military. Thereafter, early adopters during the counter-cultural movement, including the "speedy" and "beatnik" subculture, were ofte economically better off and held higher prestige compared to the stereotypical methamphetamine users of today.

Scholars and the general public alike often associate substance use intensity with social deprivation, a phenomenon that we refer to as the deprivation-drug link. However, it is unclear why the link remains in force when methamphetamine users span diverse economic backgrounds. In this study, we situate the context in which peer effects occur within the deprivation-drug link and argue that social deprivation contributes to methamphetamine use through a series of peer effects. Socially deprived methamphetamine users may experience stronger peer effects because social deprivation is associated with status frustration, leading people to seek status affirmation from peers in delinquent subcultures; social deprivation limits the network structure and inhibits people from forming ties with the broader society beyond their peers. As a result, social deprivation exposes individuals to various peer effects, leading them to use methamphetamine with greater intensity. To assess this problem, this study analyzes a respondent-driven sample of methamphetamine users from the Hunan Province of China and uses a mixed-methods strategy to test the relationships between social deprivation, peers, and methamphetamine use intensity.

Social Deprivation and Substance Use

Social deprivation refers to lower socioeconomic status (SES) and accompanying social exclusion among certain members in society (Chandola & Conibere, 2015; Myck, Najsztub, & Oczkowska, 2015; Sen, 1999); or, as the American Psychological Association succinctly puts: "limited access to society's resources" (APA, 2007). By definition, social deprivation concerns disadvantages beyond the dispossession of material goods and economic indicators, it mainly concerns the disentitlement from accessing the desirable goods and experiences conferred by advantageous social statuses.

Existing studies have discussed the association between SES and substance use (Auld, 2005; Kandel, Chen, & Gill, 1995). However, income and human capital—the main proxies for SES—can be converted into concrete benefits and advantages only in limited scenarios in which market institutions allow direct translation of monetary rewards into statuses and access. In a realistic world, our well-being and life chances are rarely determined by means of production or income alone, but are heavily shaped by prescribed social status such as nativity, ethnicity, and prestige (Cloward & Ohlin, 1960; Wilson, 1987). Studies on racial minorities and immigrants have noted that exclusion from legitimate means of upward mobility creates structural conditions that may lead some to delinquent behaviors and alternative subcultures that endorse substance use shaped by prescribed social status such as nativity, ethnicity, and (sub)cultural identity (Bucerius, 2014; Cloward & Ohlin, 1960; Escobar & Vega, 2000; Weber, 2019; Wilson, 1987). In the context of China, several types of deprivation beyond SES, including the lack of local *hukou* (household registration status) for migrants, rural residence, and ethnic minority status, intersect with factors such as education and income to jointly inform social deprivation, and in turn this may lead to greater substance use (Barnett, Yang, & Yang, 2021; Nguyen, Yeoh, & Toyota, 2006; Yang, Hu, & Schieman, 2019). We refer to such association between substance use and social deprivation as "the deprivation-drug link".

In recent years, the deprivation-drug link was reopened and questioned by social scientists who noticed the exceptions of some legal substances (Auld, 2005; Yang & Hendley, 2018) and the selective profiling of underprivileged communities by penal institutions (Muehlmann, 2018; Stevens, 2010). In short, people from more affluent communities and with higher class statuses use substances too, but those experiencing social deprivation are more likely to be profiled, exposed,

and penalized. For example, substances referred to as "club drugs" often gained their initial popularity among individuals with higher SES and greater cultural capital, not those under social deprivation (Kelly, LeClair, & Parsons, 2013; Weisheit & White, 2009). Many abused substances among low-SES populations today originated as medicinal drugs that were adopted for recreational use in subcultural party scenes. In the 1960s–1970s before the FDA tightened regulations over ephedrine synthesis, methamphetamine was popularized as a recreational drug among subscribers to the "speed freak" and "beatnik" subculture. Casual, recreational users of such drugs tended to be more educated, urbane and richer (Jacques & Wright, 2015; Parker, Aldridge, & Measham, 1998). Yet, among those who use drugs, lower SES populations tend to have a greater likelihood of experiencing problems, but this may not be fully attributable to material resources associated with income. Non-financial factors may underlie why people experiencing social deprivation consume such drugs more intensively.

For this reason, there is a gap in the literature regarding 1) whether methamphetamine use (both recreational and heavy use) is associated with social deprivation and, if so, 2) the mechanisms by which social deprivation shapes methamphetamine use (the "how" question). To contribute to the debate on the deprivation-drug link, there is an urgent need to understand the mechanisms through which social deprivation becomes operative for methamphetamine use. During the last several decades, scholarship on the social processes of substance use has pointed to peer association and peer effects as a leading mechanism for a range of deviant behaviors. Notably, socially disadvantaged individuals are more likely to be acquainted with deviant peers and rely on them for support (Haynie & Osgood, 2005; Hoeben & Weerman, 2016; Mcgloin, 2009; Ragan, 2014; Warr & Stafford, 1991). Building on this knowledge, this study elaborates on the conceptual utility of delinquent peer association as an influence within the deprivation-drug link. We argue that the salience of and pressure from peers are stronger for people with worse social deprivation, and these peer factors function to mediate the association between social deprivation and methamphetamine use intensity.

Peer Association in the Deprivation-Drug Link

The missing step in the association between deprivation and substance use may be explained by peer association, in regard to how peers function as a source of motivation to encourage substance use and also pressure conformity with delinquent peer behaviors. The association between peer delinquency and one's own deviance is not a new finding. Nominating delinquent peers in one's social networks strikes the mark of a significantly increased likelihood of one's delinquency; peer pressure was an oft-cited motive for conducting deviant behavior; peer association tends to rationalize beliefs about delinquency (Giordano, 2003; Mcgloin, 2009; Ragan, 2014; Warr, 2002; Warr & Stafford, 1991; Yang, Kelly, & Yang, 2020; Young et al., 2014). What is less examined, however, relates to the questions of whether and why peers matter more among socially deprived individuals, compared to those who possess more privileges. Few studies on substance use have examined these processes to help situate methamphetamine use in the joint context of social deprivation and the prominence of criminogenic peers. Fortunately, several existing theoretical frameworks can help us understand how social deprivation exposes individuals to a greater level of peer effects and further deviant behaviors such as methamphetamine use.

First, classic subculture theory posits that disadvantaged social status increases the likelihood for people, especially young people, to rely on peers for status affirmation and a sense of belonging (Cloward & Ohlin, 1960; Cohen, 1955; Young, 1971). A subculture consists of mobile, flexible, changing codes of conduct and sequential life arrangements that people create out of their frustration with mobility and functioning in mainstream society (Cohen, 1955). Subculture theory expects individuals who encounter status frustration over the long term to seek affirmation of

status in a subculture opposing mainstream society in terms of values and codes of conduct, and some of these codes are defiant. Studies on methamphetamine have specifically found that being embedded in a subculture of a nocturnal lifestyle increases one's substance use significantly through peer pressure, instrumental use purposes, and symbolic expressions (Kelly et al., 2013; Kelly & Vuolo, 2019; Sanders, 2016; Staff et al., 2010). In summary, subculture theory supports our study's contention that socially deprived individuals may be influenced more by peer salience and peer pressure in methamphetamine use and thus engage in more frequent use, compared to more privileged individuals.

Secondly, according to General Strain Theory, negative emotions stemming from undesirable encounters and hassles manifest as the strains individuals must cope with. Social deprivation often triggers these negative emotions (e.g. anger, frustration, depression). Consequently, people experiencing strain may seek support or validation from their peers. For individuals deprived of upward mobility or other means of success in mainstream society, peers are an important source of support for and recognition of social status (Agnew, 2002; Cloward & Ohlin, 1960). Anderson described how low-income men resorted to violent peers to navigate daily street life (Anderson 1978, 2000). Similarly, the demise of working-class jobs in Britain created room for the emergence of youths who hoped to gain status from peers rather than the workplace (Ilan, 2015; Muggleton, 2005).

Third, peer salience and peer pressure may be higher for socially deprived people, who possess fewer social connections due to network dynamics. It has been demonstrated that individuals who have fewer connections than expected at time t are those whose sequence of appearance in the network is greater than $t \times e^{-\frac{d-m}{m}}$, where d is the total connections and m is the initial connections in the network (Jackson, 2010). This equation reveals two implications for a real-world setting: as time goes forward (larger t) and with larger initial networks (greater m), latecomers in a network will have fewer connections. In other words, latecomers and individuals excluded from the main component of a social network, such as the economically poor and marginalized minorities, have to rely on network ties outside the main block of the network. For such socially deprived people, peers carry a greater salience and substantive importance. Ties in smaller and marginal networks are not naturally delinquent, but in empirical studies, they are often found to shape risk behaviors, including substance use (Scherer & Cho, 2003; Valente, Gallaher, & Mouttapa, 2004; Yang, Kelly, & Yang, 2016; Yang & Yang, 2018; Young et al., 2013).

Gendered Significance of Peers

Classical criminological works discussed the importance of peer association in one's engagement with deviant behaviors primarily in contexts where the subjects were delinquent males. However, more recent scholarship with insights from feminist theory increasingly highlights that the risk factors and prognostic pathways for deviant behaviors may be entirely different between genders (Kruttschnitt, 2013). Male and female methamphetamine users may be subjected to a differential influence of peer pressure and peer salience, as well as how deprivation pushes them closer to peers for potential support or survival.

The theoretical explanations for the gendered significance of peers are ample. First, within the context of family institutions, female crime careers are shorter and more sensitive to marriage and childbirth (Craig & Foster, 2012; Sampson & Laub, 1993). Put simply, female offenders are thus more likely to be influenced by their partners and families than peers and thus may be less likely to initiate substance use and more easily exit substance use careers. Second, feminist criminology explicates how women and men are socialized into assuming certain gender roles, which may in turn matter for deviance. Whereas female gender roles require greater efforts in cultivating and managing interpersonal relationships, the hegemonic masculine role encourages men to pursue

more instrumental achievements irrespective of interpersonal confrontations. In addition, traditional gendered divisions of labor and the separation of domestic work from the formal labor market may constrain the choices that socially deprived men and women can make within their network contexts (Silver, 1993). Women with severe social deprivation are often limited in the capacity to advance in the formal labor market, and thus may turn to domestic settings and, sometimes, enter a deviant career as a "family business" (Daly, 1992). Men with severe social deprivation, on the other hand, rely heavily on peer support to achieve instrumental goals. When such peer support does not come in the form of legitimate means, men with social deprivation will be influenced adversely by delinquent peer associations (Bucerius, 2014; Cloward & Ohlin, 1960).

Overall, several theories suggest the stronger role of peers among males, but affirmation of the proposed explanation remains inconclusive. This study will separate analyses by gender and conduct multi-group comparisons to test whether the pathways leading to methamphetamine use differ between male and female users by virtue of peer processes.

Social Deprivation and Substance Use in China

Although the relationship between social deprivation and substance use is often complicated in any society, China's legal and social context adds some nuances to the complexity. First, the prevalence of substance use depends heavily on the temporal shifts in psychoactive substance use. In the 21st century, a significant transition away from opium-based substances, such as heroin and prescribed opiates, to novel drugs including methamphetamine, has rapidly taken place, especially in urban and coastal regions (Fang et al., 2006; National Narcotics Control Commission, 2005). Early adopters of such drugs typically have an urban background and disposable income. In comparison, in inland areas of China, traditional opium-based substances still maintain a strong foothold among people with social deprivation. The highest prevalence of heroin is found among racial and ethnic minorities in Xinjiang, Yunnan, and Sichuan provinces (Fu et al., 2011; Li et al., 2003; Zhang et al., 2008).

In addition, social deprivation matters even more under China's nationalized collective economy. Although market-based activities resumed after the 1980s, benefits remain concentrated within the public sector of the economy (Liu, Wu, & He, 2008). Entitlement to many of these benefits and the safety net mostly comes through an affiliation with an organization managed by the party-state, such as Party membership, a job in the state-owned entities, urban hukou, and certificates issued by the state (Cheng & Selden, 1994; Wu & Treiman, 2007; Zhou, Tuma, & Moen, 1996). Rural-urban migrants and individuals disaffiliated with the public sector (occupational, educational, or political affiliation) are examples of marginal social status that increase the risk of deviant behaviors. Particularly, individuals without a local hukou face challenges against integration into the social and economic life of the host city. The hukou registration system is a policy that regulates population mobility and distributes benefits and welfare according to where one's hukou is registered. A person without a local hukou is comparable to an undocumented alien, only s/he is deprived of the rights to education, residence, benefits, and legal protection in his own country. Research is ample on how this hukou system functions as an apartheid system in virtually every arena of Chinese social life (Wu & Treiman, 2007).

Exclusion from full participation in the state's economic and social life leads to a reliance on one's peer networks for support and status. Peer salience and peer pressure become a significant consideration for these individuals when it comes to using drugs and the intensity of drug use. Research has identified peers as the most popular source of initiation and acquisition of substances among Chinese drug users (Li, Zhou, & Stanton, 2002).

Based on the literature review above, the current study proposes three main hypotheses:

H1. Social deprivation is positively associated with the intensity of methamphetamine use;
H2. Social deprivation is associated with a greater reliance on peers, namely, higher *peer salience* and *peer pressure*;
H3. Peer association, in terms of peer salience and peer pressure, mediates the association between social deprivation and methamphetamine use intensity.

Methodology

Data

The study utilized mixed-methods data, where analysis of qualitative interviews was used to support and elaborate upon the findings from the quantitative analyses. Survey data on methamphetamine users were collected via respondent-driven sampling (RDS), a widely recognized means of sampling hidden and hard-to-reach populations (Heckathorn, 1997). We employed RDS in Changsha, China to recruit 303 subjects. At first, 20 seed participants were recruited for initial qualitative interviews. The in-depth interviews contained questions about life history, initiation and recent methamphetamine use, and experiences of risk. These seed participants then recruited a maximum of three new recruits, with cash incentives for both the recruiter and recruitees. Each new recruitment was linked to a numbered ticket that could be redeemed for the cash incentive and also for the purpose of identifying the networked relationship between existing subject and new participants. All newly recruited subjects were also offered the same incentives to recruit others in their network into the study. Thus, this process occurred over successive waves of recruitment in order to penetrate more deeply into networks. The maximum number of recruitments for an individual subject was set at three to avoid inflating recruits from those with larger networks. The process continued across several waves to foster participation and recruitment of a diverse population of methamphetamine users (Heckathorn, 1997). Analyses of sample composition indicated the sample had reached equilibrium in SES and other characteristics, at the point of which the characteristics of the sample remained stable.

Inclusion criteria for the participants are: self-reported methamphetamine use within the previous three months, lived in a non-institutionalized location when the study took place, and had the capacity to give informed consent (including no obvious presence of serious psychiatric disorders that would prevent a capacity to consent). The final sample size from RDS reached 303 participants. Data from all 303 participants were used for quantitative analyses, and we interviewed a sub-sample of 40 respondents for the qualitative analyses. The IRB at [redacted] University and the ethics office at [redacted] University approved the study.

Measurement

Measurement for the proposed concepts and the path relationships among them are depicted in Figure 1. The focal concepts are methamphetamine use intensity as the dependent variable, peer association as mediators, and social deprivation as the independent variable.

Dependent Variable. Rather than rely on a single indicator of consumption, our dependent variable—the intensity of methamphetamine use was measured by three indicators: the frequency of methamphetamine used in days, the average quantity of methamphetamine used in grams, and methamphetamine-related problems. Respondents were directed to answer "How many days during the past 3 months have you used methamphetamine," recorded in the number of days reported by the respondent. The respondents were also asked "On average, how much methamphetamine did you use each day during the past 3 months?". The field interviewer recorded the

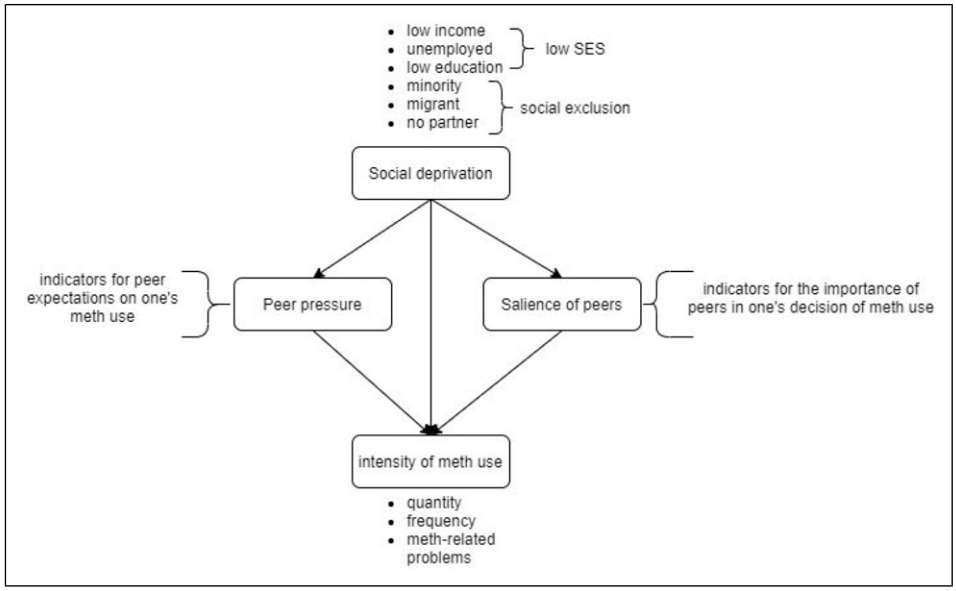

Figure 1. Path model on peer delinquency as a mediator for the SES-drug link.

number in grams reported by the respondent. Methamphetamine-related problems were accounted for via 15-items on interpersonal, health, and psychological problems related to methamphetamine use. The question items were rated on a frequency scale of "never", "a few times a month", "once or twice a week", to "daily". Examples of such questions include: "Because of my methamphetamine use I have lost weight or not eaten properly", "I have failed to do what was expected of me because of my methamphetamine use", "When I use methamphetamine my personality has changed for the worse", "I have had money problems because of my methamphetamine use". These 15 items extended from a modified form of the Shortened Inventory of Problems – Alcohol and Drugs (SIP-AD; Blanchard et al., 2003) a well-validated scale that was modified for use with Chinese methamphetamine users(Blanchard et al., 2003).

Social Deprivation. Social deprivation extends and differs from conventional socioeconomic status by jointly considering the lack of actual goods and the lack of access to these goods. Thus, social deprivation comprises both social exclusion by various subordinate statuses and the actual SES disadvantage (Chandola & Conibere, 2015; Sen, 1981; Wilson, 1987). In empirical studies, indicators of social deprivation should consist of 1) low SES levels or a lack of material goods and 2) marginal statuses (Butler et al., 2013; Myck et al., 2015; Yang et al., 2019). Following this conception, we created a deprivation indicator that summates dichotomous scores for each disadvantageous SES and status. Having an annual income below 40,000 Yuan ($5,500, 37% of the sample), lacking full-time employment (66%), having not finished compulsory education (12%), altogether reflect low SES levels; whereas being a rural-to-urban migrant (18.48%), being an ethnic minority (2%), and having no partner/spouse (28%) reflect social exclusion in the context of contemporary China. A higher value in the social deprivation index suggests a higher level of social deprivation.

Deviant Peer Association. The effect of peers comprises three important aspects when affecting an individual's behaviors, that is, peer salience, peer pressure, and peer deviance (Giordano, 2003). Since the referent relations assessed by the survey were already parallel to other methamphetamine

users, the peers' deviant status here in this study is mostly invariant. Therefore, we utilized measures of peer pressure and the salience of the peers with 5-point Likert scales. For peer pressure on using methamphetamine, participants were asked questions on the relational preferences of meth-using peers: "my friends made fun of people not on methamphetamine", "my friends look down on people not on methamphetamine", "my friends have pressed me to use methamphetamine", "my friends only hang out with methamphetamine users", "my friends won't like it if I stopped doing methamphetamine". For peer salience in drug use, the survey asked the participants to rate the importance of peer-related social scenarios in his/her meth-using behaviors: "when I hang out with my friends who suggest we do it", "when others in the room were doing methamphetamine and expect me to join", "when I hang out with other methamphetamine users", "when I was with friends to have a good time", "when I was with an intimate friend and wanted to feel closer".

Qualitative Interviews

A sub-sample of 40 methamphetamine users were invited to complete qualitative interviews. Interviews were held in private locations to maintain confidentiality. The interview guide focused a range of aspects of the individuals' lives, their interpersonal relationships, and experiences of methamphetamine use. It also captured data on norms and contexts of methamphetamine use, perceptions of risk, and problems related to methamphetamine use. The semi-structured interview utilized critical incident measures to draw out specific narratives about participants' methamphetamine use practices. Critical incident measures reduce recall bias and provide context for behaviors rooted within specific events (Leonard & Ross, 1997). All interviews were completed in Chinese by native speaking interviewers. Interviewers were encouraged to probe further for details within each domain of the interview guide. The interviews were audio-recorded and then transcribed verbatim and also translated into English.

Analytical Strategies

We employed structural equation modeling (SEM) to test the relationship between concepts and verify the mediation analysis for the SES-drug link. First, we presented the confirmatory factor analysis results in SEM. Each latent construct was loaded on the manifest measures detailed in the Measurement section. Then, we presented the path analysis results on the relationships between the latent constructs. Specifically, the latent construct of social deprivation is specified to directly affect methamphetamine use intensity as well as indirectly affect it through the mediating roles of peer pressure and peer salience. Both bootstrapping and model-based tests for significance that were feasible with SEM can generate more reliable estimates of the indirect effect and its statistical significance (MacKinnon & Fairchild, 2009; Zhao, Lynch, & Chen, 2010). For a demographic control variable (gender) that is not theoretically incorporated in our conceptual model, we examine the gender's confounding effect by an additional multiple-group SEM to test whether precedent findings differ between two genders. We used maximum likelihood estimation for the SEM and reported the following model fit indices: CFI, TLI, and RMSEA. CFI and TLI are considered satisfactory when above 0.9. RMSEA below 0.08 is satisfactory. We built the models in the environment of Stata 16.

The goal of the mixed-methods approach was to use qualitative data to illustrate aspects of the processes identified within the quantitative model. For the qualitative interview data, we employed a thematic analysis on the heels of the statistical analysis to verify and describe these processes (Boyatzis, 1998). In this manner, the thematic analysis was leveraged as an intentional mixed-methods strategy. Specifically, we used NVIVO to code the narratives of methamphetamine users to extract their descriptions of personal backgrounds as well as coded data on socialization among friends and methamphetamine use. Transcripts were coded into schemes in the form of free and

tree codes. The coded data were synthesized and evaluated upon completion of the coding. In particular, we examined patterns among those identified as experiencing social deprivation and those not experiencing social deprivation. The quotations utilized within the manuscript represent wider themes rather than outlying individual assertions. We have labeled quotations with anonymized respondent codes to highlight the experiences of a range of study participants.

Results

Table 1 displays various substance use and demographic characteristics. The average quantity of methamphetamine consumption is 0.32 g, with the highest per-episode quantity being 3 g. In the last three months, the mean days of consumption are 23.8 days. An average user reported almost 7 meth-related problems of various kinds. The theoretical range for social deprivation is zero–6 (since there are six indices composing it), while the actual range is zero–4. The mean social deprivation score is 1.54, meaning that, on average, participants suffered from more than one type of social deprivation. With respect to specific demographics, a total of 61.4% of the respondents have no full-time employment, 37.6% earn less than 40,000 Yuan a year, 11.9% haven't completed high school, 25.1% are migrants to this city, 28.2% are singles, 87.1% are male, and a small 1.9% are ethnic minorities.

Structural Equation Modeling

Running SEM with both path analysis and confirmatory factor analysis of the measurements generated appropriate model fit and coefficient loadings as expected by the hypothesis. According to the upper panel of Table 2, which contains the confirmatory factor analysis, the indicators of all three latent concepts significantly loaded on each latent construct at 99.9% confidence level and with a moderate-to-strong magnitude of the coefficient. This suggests that the measured indicators have correctly reflected the underlying conceptual unity for peer salience, peer pressure, and methamphetamine use intensity.

The path analysis in the lower panel of Table 2 shows that methamphetamine use is strongly associated with peer pressure (.23, $p < .001$) and peer salience (.74, $p < .001$). Delinquent peer

Table 1. Sample Characteristics.

	Mean (SD)	Range
Meth quantity (gram)	.32 (.28)	0-3
Meth frequency (days)	23.8 (28.97)	1-90
Meth-related problems	6.74 (4.78)	0-15
Summated deprivation	1.54 (1.06)	0-4
Peer pressure	1.64 (.72)	1-5
Peer salience	2.58 (1.16)	1-5
	Proportion % (n)	
Full-time employment	38.6 (117)	
Income <40,000 Yuan	37.6 (114)	
Education < high school	11.9 (37)	
Migrant	25.1 (76)	
Single	28.2 (86)	
Minority	1.9 (6)	
Male	87.1 (264)	

Table 2. Results From SEM (n = 303). Coefficient Standardized by the Measurement Unit.

Measurement loadings	Coef	s.e
Peer Pressure		
my friends look down on people not on meth	.66***	.04
my friends make fun of people who don't do meth	.74***	.03
my friends have pressed me to use meth	.56***	.05
my friends only hang out with meth users	.62***	.04
my friends won't like it if I stopped doing meth	.72***	.04
Salience of Peer		
when I hang out with my friends who suggest we do it	.76***	.03
when others in the room were doing meth and expect me to join	.76***	.03
when I hang out with other meth users	.97***	.02
when I was with friends to have a good time	.69***	.03
when I was with an intimate friend and wanted to feel closer	.60***	.04
Meth Use Intensity		
quantity	.48***	.05
frequency	.73***	.04
problems	.72***	.04
Structural loadings		
Peer pressure → meth use	.28***	.06
Peer salience → meth use	.73***	.04
Social deprivation → meth use	.02	.05
Social deprivation → peer pressure	.23***	.06
Social deprivation → peer salience	.13*	.06
Social deprivation → peer pressure + peer salience → meth use	.16**	.06

Note. Freed covariance of errors: peer pressure indicator 1 and pressure indicator 5, salience indicator 1 and 2, salience indicator 4 and 5. Two-tailed p-value for significance test: ***p < .001, **p < .01, *p < .05. Goodness of fit: CFI−.91, TLI−.89, RMSEA−.078, BIC−16695.

association in general constitutes a crucial dimension of one's own methamphetamine use. Social deprivation is associated with stronger peer pressure (.25, $p < .001$) and peer salience (.12, $p < .05$), indicating that people with worse social deprivation are subject to greater peer pressure and the importance of peers is also stronger among them. After considering peer pressure and peer salience, social deprivation is no longer significantly associated with methamphetamine use. This implies that the deprivation-drug link exists indirectly through peer effects. We may conclude that social deprivation is associated with more intensive methamphetamine use (.14, $p < .01$) because socially deprived people encounter greater levels of peer pressure and peer salience. The current model specification has only freed three pairs of measurement errors. With CFI at .91, TLI at .89, RMSEA at .078, the model has achieved acceptable goodness-of-fit indices to confirm a good alignment between the conceptual hypotheses and data covariance structure, especially with the moderate sample size and non-continuous variables.

We also considered that gender may matter for the revealed mechanisms. Men and women are socialized into different gender norms of behaviors and attitudes, as well as the hierarchies of relationships. Therefore, what matters for males, such as peer groups, may not carry similarly strong connotations for females. To test whether the findings vary by gender, a multiple-group comparison was conducted and its results are shown in Table 3. Plausibly due to the smaller female sample size (n = 39), some measurement loadings become non-significant among females. None of the coefficients in the measurement part of the SEM significantly varies between men and

Table 3. Multiple-group Division of SEM by Gender and Wald Test of Real Differences.

	Female (n = 39)	Male (n = 264)	Wald test χ^2 (df = 1)
	Coef (se)	Coef (se)	
Measurement loadings			
Peer pressure			
my friends made fun of people not on meth	.79(.19)***	.41(.05)***	1.04
my friends look down on people not on meth	.54(.26)*	.55(.05)***	7.64**
my friends think meth is cool	.50(.27)	.81(.03)***	11.38**
my friends have pressed me to use meth	.31(.23)	.53(.05)***	3.0
my friends only hang out with meth users	.57(.22)*	.71(.04)***	4.84*
my friends need to do meth to have a good time	.66(.13)***	.58(.05)***	1.26
my friends won't like it if I stopped doing meth	.20(.21)	.76(.03)***	7.51**
Salience of peer			
when I hang out with my friends who suggest we do it	.79(.06)***	.79(.02)***	.07
when others in the room were doing meth and expect me to join	.82(.06)***	.78(.03)***	.34
when I was pressed to do it	.37(.14)**	.65(.04)***	1.48
when I hang out with other meth users	1(.05)***	.94(.02)***	.01
when I was with friends to have a good time	.60(.10)***	.72(.03)***	.24
when I was with an intimate friend and wanted to feel closer	.29(.15)*	.65(.04)***	2.21
Meth use degree			
quantity	.81(.08)***	.46(.06)***	.12
frequency	.90(.06)***	.74(.04)***	.37
problems	.54(.13)***	.71(.04)***	7.79**
Structural loadings			
Peer pressure → meth use	.02(.15)	.23(.07)***	2.22
Peer salience → meth use	.49(.14)***	.77(.04)***	.01
Social deprivation → meth use	.11(.13)	−.01(.06)	.73
Social deprivation → peer pressure	−.23(.18)	.24(.06)***	2.44
Social deprivation → peer salience	−.09(.17)	.11(.06)	1.05

Note. Covariance of error structure specified as precedent. Two-tailed p-value for significance test: ***p < .001, **p < .01, *p < .05. Goodness of fit: CFI−.84, TLI−.81, RMSEA−.109, BIC−16816.

women. This suggests the items that measure each latent construct are functioning in the same way for both genders. However, a Wald test indicates the structural pathway from social deprivation to peer pressure differs significantly between men and women (0 vs.26, $p < .001$). For female users, social deprivation is not associated with greater peer pressure as it is in the males.

Qualitative Analysis on Discourse on Peers

Results from qualitative analysis support the quantitative findings that strong delinquent influence from peers was most pronounced among those with a higher level of social deprivation. As argued above, stronger vulnerability to delinquent peers is exposed among those with multiple joint disadvantaged identities.

Peers for Users with Higher Social Deprivation

Prominent peer salience was the stumbling block for many to reduce or stop using methamphetamine, particularly when the users have no recourse other than these friends. For example, one unemployed and illiterate respondent highlighted hometown friends and entrenched habits, "I tried 4 months to get over it, but I used it again after getting back to Changsha. What is the key for getting over drugs? Leaving the environment. Detox is not effective." (XY13) He believed that leaving a social environment conducive to drugs is more effective than medical detoxification treatment.

One rural-urban migrant man highlighted drugs as a means to reinforce friendship. "I have lots of friends who use meth and could treat me…. The person who is my friend and we experienced terrible things together, he won't ask me for money…If I gave him money for drugs, we would never be friends" (XY14). Other disadvantaged methamphetamine users preferred to stay with their friends instead of home, either because they did not have one or had been expelled from home. "I barely go back home. I always stay at my friends' and just occasionally go to the rural places", said a rural-urban migrant user who lived under poverty line. Another homeless user said, "Almost all my friends are using it, two or three of us [use it together]…if you need 300 drug users, no big deal, I can help" (RF25). Powerlessness to quit methamphetamine and leave the peer circle is also evident among disadvantaged users. For one respondent who migrated to the city from countryside in a northern province, whose parents left him for the province capital and he quit school at 14, he was initiated to the circle by friends and became desperate about quitting. When asked about his initiation into meth use, he replied: "It was a person in my circle, my friend when I was young…., no friends became addicted, not as terrible as I did…I almost gave up on myself" (RF26).

Peers for Users with Lower Social Deprivation

Due to the ubiquity of drug-using peers among methamphetamine users, it may be more revealing to explore the counterfactual: the salience of peers and peer pressure among subjects who enjoyed greater advantages. These advantaged users typically fall in these categories: they often owned a business themselves or were the children of a family business owner, possessed abundant assets (e.g. 10 million Yuan for one respondent, or a BMW), and lived in the city. The discourse from these users with lower social deprivation reflects two thematic distinctions. The first distinction is that, compared to users with greater social deprivation, they emphasized the functional and recreational purpose of their use over the need to appease peer pressure. Second, they expressed a confidence in the personal locus of control over addiction and a relative independence from other users.

Using methamphetamine as a functional drug for recreational purposes is a prevalent narrative among the more privileged users. One interviewee was a 22 year old son of a steel business family. At the time, he was also enrolled at an expensive international school. He told us that he used methamphetamine to boost sexual performance with females who were attracted to him: "I was just curious about it and was asked to use it by several women". "It's actually very good to have sex after using it…It's about having sex and playing cards. Sometimes they could play for a whole day and night after using it."(RF21).

Another son of a wealthy businessman denied his addiction to methamphetamine beyond "it has just harmed my body". Besides, there are even functional benefits according to him: "after using it, you would become very focused on things" (RF22). The respondent who owned a BMW detached himself from other users and distanced his own use from his peers: "Other people know that my family is rich. I have a BMW car. They are just jealous and they sell meth… Still, I didn't

join them a lot" (XY11). Another person had parents as business executives and lived off his revenue and dividend income. He emphasized that he only "use it when I have free money for that". He also claimed the usage was only functional for staying up to play Internet games (which could be profit-turning) and didn't believe he would become addicted (RF22). Thus, many narratives among wealthier respondents subjectively emphasized their functional use rather than peer driven consumption.

Unlike methamphetamine users with significant social deprivation, the better off users also expressed in their discourse a greater independence from their friends and a more individualistic locus of control. They emphasized personal control over methamphetamine use: "I just used it once in a while. I once stopped using it for a while since I was really thin and I was afraid that my body might be injured. After I felt better and became fatter, I started to use it again. Now I feel numb about methamphetamine and I'm no longer interested in using it" (RF24). A rich government cadre who had "sold two cars and spent 4 million Yuan on meth" described having "a good job, and my car, my wife, my son, enough money and a house" (XY07), and his counterfeit college degree manifested at least an aspiration for cultural capital, if not the actual possession of it. He brushed off the problem of addiction and stressed that his will is strong: "If you want to get over it, sometimes you can control that. I want to get over it by myself, so it's effective" (XY07). Thus, personal control rather than the influence of others was a common theme.

Two female respondents also had a solid financial background, and their methamphetamine use was catalyzed by personal relationship problems, instead of by other peers. One college-educated girl's decision to break up with her boyfriend may also indicate stronger independence (XY12). The salience of peers was deemed by these participants as low, and they instead presented a discourse of the freedom of the will. The detachment also manifests in applying stigma to separating themselves from what they perceive as impure others, calling them "sluts and slackers" (XY11); or, distancing themselves by frequently referring to peers using as "they" instead of "we". While the narratives offered by the high SES subjects overemphasized their "free agency", these narratives nonetheless cohere with the quantitative findings above that peer relations are a key mediator in the deprivation-drug link Table 4.

Discussion

A widely perceived characteristic about substance users is the imagery of people with low income, low education, subordinate status, or migrant identities, namely, those with social deprivation as the primary at-risk population for drug use. On one hand, there is evidence to support this deprivation-drug link (Buchmueller & Zuvekas, 1998; Kandel & Yamaguchi, 1987; Mossakowski, 2008; Room, 2005; Yang, 2017; Yang et al., 2008). What problematizes the deprivation-drug link is the fact that middle class and upper-class individuals have consumed substances for recreational and functional purposes throughout human history (Dikötter, Laamann, & Xun, 2002; Jacques & Wright, 2015; Muehlmann, 2018), and better SES may be positively associated with substance use in relation to the prescribed socialization values of the substance (Henkel, 2011; Yang & Hendley, 2018).

The second gap in the literature concerns the mechanism behind the deprivation-drug link. There must be certain social elements intervening in the deprivation effects on substance use in such a manner that the extent to which substance use is a function of social deprivation relies on the effectiveness of the intervening element. Since drug use is profoundly social during its initiation, acquisition, and persistence, we proposed that deviant peer association is the mediator between social deprivation and substance use. Applying SEM and qualitative analysis of the narrative themes among a respondent-driven sample of Chinese methamphetamine users, this study contributes to examining the two problems above.

Table 4. Thematic Nodes and Concept-evidence.

Themes	*n*. respondents contributed	*n*. Excerpts assigned	Sample quotes
Attitude to peer	29	78	Some of my friends are no longer close to me. Also that guy, you know, he tried to ruin my life
Peer activities	36	81	[I] went to friends' place and used drugs with two men and a woman
Agency-reliance	25	58	I haven't used it for about two months. If I didn't think about it, I'll be fine. Now I have a stable job, I won't think about using it. As long as my friends don't talk about it, I won't feel like using it
Addictiveness	15	44	I agreed but I was afraid I might become addicted to it. They told me I wouldn't be addicted if I just used it occasionally. Then I used it. I didn't use it very often later on. But I once used it twice within a week
Functional use	14	25	They would additionally focus on one particular thing. For instance, if you were playing video games, you would keep on playing it for several hours
Deprivation-SES	32	61	I earned some money and my family gave me some. I also borrowed some from others
Deprivation-status	9	15	If I didn't use drugs, I might still study at school like most of my peers. I won't be like this. Or maybe I am already a rich boss, who knows

First, the current study contributes to the literature by adopting and innovating better measurements of social deprivation and methamphetamine use. The concept of social deprivation comprises of both SES-level measured by mostly the means to reproduce material goods and a barrier to the desirable status and entitlement limited some status groups. Therefore, this study goes beyond conventional SES and uses marginal social statuses, such as rural-urban migration, ethnic minority, and living alone, to construct an index of social deprivation. By analyzing the degree of methamphetamine use, including the quantity, frequency, and problem symptoms of methamphetamine use, we bypassed the thorny issue of casual recreational substance use by focusing on a fuller range of consumption intensity beyond simple recent use status. Results from confirmatory factor analysis showed that all of our conceptual constructs were well measured and represented by the manifest indicators. This study confirms the positive association between social deprivation and methamphetamine use intensity.

Second, this study suggests that peer effects on deviance, including peer pressure and peer salience, have an influential upstream factor in social deprivation. The individuals subjected to greater social deprivation, including minorities, migrants, and the poor, are more reliant on their peers for social support and emotional needs (Kim, Zane, & Hong, 2002; Warr, 2002; Weatherburn & Lind, 2001; Yang et al., 2020; Zimmerman & Messner, 2011), thus may be more likely to succumb to peer pressure and peer salience in their methamphetamine use patterns. We showed that delinquent peer association fully mediates the effect of social deprivation on methamphetamine intensity. Outside the mediation of the two peer components, there is no direct association between social deprivation and methamphetamine use. This implies that delinquent peer association explains why social deprivation is related to more intensive methamphetamine use: socially deprived substance users are subjected to stronger peer effects. The discourse of interviewees also informed us that methamphetamine users with social deprivation tend to place

greater importance on their peers and expressed less self-efficacy in both initiation and continuation of their methamphetamine use careers. On the contrary, the well-off methamphetamine users in the sample tended to emphasize their own personal control over methamphetamine or less reliance on peers for social and emotional support in their consumption. Through the qualitative analysis, we highlight that less deprived users tend to set a semantic boundary between themselves and those seen as disreputable consumers of the drug.

These findings resonate with several research traditions. We argue that peer deviance tends to develop out of the realm of social deprivation. Subcultural theory delineated the paths socially disadvantaged people, especially youths, take towards a deviant subculture that highlights distinct norms and codes of conduct. When people encounter unsurmountable obstacles of gaining upward mobility in mainstream society, they may resort to peers in subcultures for an affirmation of self-esteem (Cloward & Ohlin, 1960; Cohen, 1955). The salience of peers is particularly pronounced in deviant subcultures that feature risk-taking and hedonism as a rebellion to working-class values, and this may lead to higher levels of substance use (Kelly et al., 2013; Muggleton, 2005; Young, 1971). Parallel to subculture theory, social network theory argues that marginal and disadvantaged social statuses constrain the size of one's social networks because the preferential attachment among those with resources fosters a centrifugal formation of social ties in which the "poor get poorer" in terms of social ties (Jackson, 2010). Lacking ties to the mainstream block of the societal network, many people with social deprivation resort to deviant peers for resources and support. Lastly, the experience of strain produced by inability to meet desired goals and expectations (Agnew, 2002) may facilitate exposure to and reliance upon deviant peers as sources of support and affirmation.

Put in a localized perspective in the context of contemporary China, the findings indicate the consequences of the marginal status of drug users under China's zero-tolerance penalization policy towards drug use. While Class-I substances such as methamphetamine do not result in penal measures upon the first arrest, second and further arrests place the users into compulsory detox centers and re-education camps (Cohen & Amon, 2008). The penalization complex further punishes these users into greater social deprivation by firing them from current public sector posts and barring them from future employment and education in the public sector. Families of the detainees will also be directly informed. As a result, socially deprived methamphetamine users in China rely on a homogenous peer group for survival and return to strong peer influence, causing recidivism by the very policy designed to reduce it. While peer effects are ubiquitously mentioned in studies based in western contexts, the stronger link between deprivation and peer association may have a unique origin story in how delinquent peers and people suffering deprivation constitute a self-reinforcing circle in the Chinese legal context. More research is needed in this area.

Limitations

A few limitations should be noted lest the findings of this study be applied beyond what it can reasonably offer. First, methamphetamine users are a stigmatized hidden group in China; reaching this population required the investigators to use non-probability sampling. Nonetheless, respondent-driven sampling has been shown to be highly effective in reaching hidden populations such as methamphetamine users in China. Second, the cross-sectional nature of this study precludes absolute causal inference. Indirect and direct effects generated by SEM with cross-sectional data should be interpreted as such. Third, the limited size of the female subsample – a product of significant gender stratification of substance use in China rather than an artifact of the RDS sample – should make readers cautiously interpret the non-significant findings in gender differences.

Concluding Remarks

Overall, the current study contributes to the literature by showing that social deprivation is a crucial factor for more intensive methamphetamine use, but social deprivation per se does not directly affect methamphetamine use. That is to say, socially deprived people are structured or pressed into the greater intensity of methamphetamine use through strong peer pressure and peer salience. Drug policies and social work with an intervention goal should avoid turning the "war on drugs" into a "war on the poor" in China. Instead, tackling the peer effects on substance use requires attention to how peers gain paramount importance in the lives of socially deprived people. Providing them with other formal platforms of social support and economic mobility, such as training programs, youth clubs, community centers, may reduce the impact of delinquent peer association on substance use.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the China Medical Board; 21-436 and Guangdong Office of Philosophy and Social Science; GD21YSH05.

ORCID iDs

Xiaozhao Y. Yang https://orcid.org/0000-0001-7354-7208
Brian C. Kelly https://orcid.org/0000-0003-2039-1347

References

Agnew, R. (2002). *Pressured into crime: An overview of general strain theory*. Oxford University Press.

Anderson, E. (1978). *A place on the corner: A study of black street corner men*. University of Chicago Press.

Anderson, E. (2000). *Code of the street: Decency, violence, and the moral life of the inner city*. WW Norton & Company.

APA. (2007). *The APA Dictionary of Psychology*. American Psychological Association.

Auld, M. C. (2005). Smoking, drinking, and income. *Journal of Human Resources*, *40*(2), 505–518. https://doi.org/10.3368/jhr.xl.2.505

Barnett, R., Yang, T., & Yang, X. Y. (2021). *Smoking environments in China: Challenges for Tobacco control*. Springer International Publishing.

Blanchard, K. A., Morgenstern, J., Morgan, T. J., Lobouvie, E. W., & Bux, D. A. (2003). Assessing consequences of substance use: Psychometric properties of the inventory of drug use consequences. *Psychology of Addictive Behaviors*, *17*(4), 328–331. https://doi.org/10.1037/0893-164X.17.4.328

Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. Sage.

Bucerius, S. M. (2014). *Unwanted: Muslim immigrants, Dignity, and drug dealing*. Oxford University Press.

Buchmueller, T. C., & Zuvekas, S. H. (1998). Drug use, drug abuse, and labour market outcomes. *Health Economics*, *7*(3), 229–245. https://doi.org/10.1002/(sici)1099-1050(199805)7:3<229::aid-hec315>3.0.co;2-r

Butler, D. C., Petterson, S., Phillips, R. L., & Bazemore, A. W. (2013). Measures of social deprivation that predict health care access and need within a rational area of primary care service delivery. *Health Services Research*, *48*(2 Pt 1), 539–559. https://doi.org/10.1111/j.1475-6773.2012.01449.x

Chandola, T., & Conibere, R. (2015). Social exclusion, social deprivation and health. In J. D. Wright (Ed.), *International Encyclopedia of the social & behavioral Sciences* (2nd ed., pp. 285–290). Elsevier.

Cheng, T., & Selden, M. (1994). The origins and social consequences of China's Hukou system. *The China Quarterly*, *139*(Sep), 644–668. https://doi.org/10.1017/s0305741000043083

Cloward, R. A., & Ohlin, L. E. (1960). *Illegitimate means and delinquent subcultures*. Pearson/Prentice Hal.

Cohen, A. K. (1955). A general theory of subcultures. In K. Gelder, & S. Thornton (Eds.), *The subcultures reader* (pp. 50–59). Routledge.

Cohen, J. E., & Amon, J. J. (2008). Health and human rights concerns of drug users in Detention in Guangxi province, China. *PLoS Medicine*, *5*(12), e234. https://doi.org/10.1371/journal.pmed.0050234

Craig, J., & Foster, H. (2012). Desistance in the transition to adulthood: The roles of marriage, military, and gender. *Deviant Behavior*, *34*(3), 208–223. https://doi.org/10.1080/01639625.2012.726173

Daly, K. (1992). Women's pathways to felony court: Feminist theories of lawbreaking and problems of representation. *S. Cal. Rev. L. & Women's Stud*, *2*(2), 11.

Dikötter, F., Laamann, L., & Xun, Z. (2002). Narcotic culture. A social history of drug consumption in China. *British Journal of Criminology*, *42*(2), 317–336. https://doi.org/10.1093/bjc/42.2.317

Escobar, J. I., & Vega, W. A. (2000). Mental health and Immigration's AAAs: Where are We and where do We go from here? *The Journal of Nervous and Mental Disease*, *188*(11), 736–740. https://doi.org/10.1097/00005053-200011000-00003

Fang, Y.-X., Wang, Y.-B. O., Shi, J., Liu, Z.-M., & Lu, L. (2006). Recent trends in drug abuse in China. *Acta Pharmacologica Sinica*, *27*(2), 140–144. https://doi.org/10.1111/j.1745-7254.2006.00270.x

Fu, Z., He, N, Duan, S., Jiang, Q., Ye, R., Pu, Y., Zhao, G., Huang, Z. J., & Wong, F. Y. (2011). HIV Infection, sexual behaviors, sexual networks, and drug Use among rural residents in Yunnan province, China. *AIDS and Behavior*, *15*(5), 1017–1025. https://doi.org/10.1007/s10461-010-9797-6

Giordano, P. C. (2003). Relationships in adolescence. *Annual Review of Sociology*, *29*(1), 257–281. https://doi.org/10.1146/annurev.soc.29.010202.100047

Haynie, D. L., & Osgood, D. W. (2005). Reconsidering peers and delinquency: How do peers matter? *Social Forces*, *84*(2), 1109–1130. https://doi.org/10.1353/sof.2006.0018

Heckathorn, D. D. (1997). Respondent-driven sampling: A new approach to the study of hidden populations. *Social Problems*, *44*(2), 174–199. https://doi.org/10.1525/sp.1997.44.2.03x0221m

Henkel, D. (2011). Unemployment and substance use: A review of the literature (1990-2010). *Current Drug Abuse Reviews*, *4*(1), 4–27. https://doi.org/10.2174/1874473711104010004

Hoeben, E. M., & Weerman, F. M. (2016). Why is involvement in unstructured socializing related to adolescent delinquency? *Criminology*, *54*(2), 242–281. https://doi.org/10.1111/1745-9125.12105

Ilan, J. (2015). *Understanding street culture: Poverty, crime, youth and Cool*. Palgrave Macmillan.

Jackson, M. O. (2010). *Social and economic networks*. Princeton university press.

Jacques, S., & Wright, R. (2015). *Code of the suburb: Inside the world of young middle-class drug dealers*. University of Chicago Press.

Kandel, D., Chen, K., & Gill, A. (1995). The impact of drug Use on Earnings: A life-span perspective. *Social Forces*, *74*(1), 243–270. https://doi.org/10.2307/2580631

Kandel, D. B., & Yamaguchi, K. (1987). Job mobility and drug Use: An event history analysis. *American Journal of Sociology*, *92*(4), 836–878. https://doi.org/10.1086/228585

Kelly, B. C., LeClair, A., & Parsons, J. T. (2013). Methamphetamine Use in club subcultures. *Substance Use & Misuse*, *48*(14), 1541–1552. https://doi.org/10.3109/10826084.2013.808217

Kelly, B. C., & Vuolo, M. (2019). Social network ties to nightlife and healthcare professionals and prescription drug misuse among young adults. *International Journal of Drug Policy*, *66*(4), 48–56. https://doi.org/10.1016/j.drugpo.2019.01.007

Kim, I. J., Zane, N. W. S., & Hong, S. (2002). Protective factors against substance use among Asian American youth: A test of the peer cluster theory. *Journal of Community Psychology*, *30*(5), 565–584. https://doi.org/10.1002/jcop.10022

Kruttschnitt, C. (2013). Gender and crime. *Annual Review of Sociology*, *39*(1), 291–308. https://doi.org/10.1146/annurev-soc-071312-145605

Leonard, L., & Ross, M. W. (1997). The last sexual encounter: The contextualization of sexual risk behaviour. *International Journal of STD & AIDS*, *8*(10), 643–645. https://doi.org/10.1258/0956462971918788

Li, C., Li, B., Liu, Z., & Shi, E. (2003). Investigation into the drug- inflicted area in Northwest China and some considerations. *Journal of Gansu Political Science And Law Institute*, *6*(14), 6.

Li, X., Zhou, Y., & Stanton, B. (2002). Illicit drug initiation among institutionalized drug users in China. *Addiction*, *97*(5), 575–582. https://doi.org/10.1046/j.1360-0443.2002.00119.x

Liu, Y., Wu, F., & He, S. (2008). The making of the new urban poor in transitional China: Market versus institutionally based exclusion. *Urban Geography*, *29*(8), 811–834. https://doi.org/10.2747/0272-3638.29.8.811

MacKinnon, D. P., & Fairchild, A. J. (2009). Current directions in mediation analysis. *Current Directions in Psychological Science*, *18*(1), 16–20. https://doi.org/10.1111/j.1467-8721.2009.01598.x

Mcgloin, J. M. (2009). Delinquency balance: Revisiting peer influence. *Criminology*, *47*(2), 439–477. https://doi.org/10.1111/j.1745-9125.2009.00146.x

Mossakowski, K. N. (2008). Is the duration of poverty and unemployment a risk factor for heavy drinking? *Social Science & Medicine*, *67*(6), 947–955. https://doi.org/10.1016/j.socscimed.2008.05.019

Muehlmann, S. (2018). The gender of the war on drugs. *Annual Review of Anthropology*, *47*(1), 315–330. https://doi.org/10.1146/annurev-anthro-102317-050214

Muggleton, D. (2005). From classlessness to club culture: A genealogy of post-war British youth cultural analysis. *Young*, *13*(2), 205–219. https://doi.org/10.1177/1103308805051322

Myck, M., Najsztub, M., & Oczkowska, M. (2015). "6. Measuring social deprivation and social exclusion. In *Ageing in Europe-supporting policies for an inclusive society* (pp. 67–78). de Gruyter.

National Narcotics Control Commission. (2005). Annual report on drug control in China. In *National Narcotics control Commission*.

Nguyen, L., Yeoh, B. S. A., & Toyota, M. (2006). Migration and the well-being of the 'left behind' in Asia. *Asian Population Studies*, *2*(1), 37–44. https://doi.org/10.1080/17441730600700507

Parker, H. J., Aldridge, J., & Measham, F. (1998). *Illegal leisure: The normalization of adolescent recreational drug use*: Routledge.

Ragan, D. T. (2014). Revisiting "what they think": Adolescent drinking and the importance of peer beliefs. *Criminology*, *52*(3), 488–513. https://doi.org/10.1111/1745-9125.12044

Room, R. (2005). Stigma, social inequality and alcohol and drug use. *Drug and Alcohol Review*, *24*(2), 143–155. https://doi.org/10.1080/09595230500102434

Sampson, R. J., & Laub, J. H. (1993). *Crime in the making: Pathways and turning points through life*. Harvard University Press.

Sanders, B. (2016). Young people, clubs and drugs. In *Drugs, clubs and young people* (pp. 15–26). Routledge.

Scherer, C. W., & Cho, H. (2003). A social network contagion theory of risk perception. *Risk Analysis*, *23*(2), 261–267. https://doi.org/10.1111/1539-6924.00306

Sen, A. (1981). *Poverty and Famines: An essay on entitlement and deprivation*. Oxford University Press.

Sen, A. (1999). *Development as freedom*. Anchor Books.

Silver, H. (1993). Homework and domestic work. *Sociological Forum*, *8*(2), 181–204. https://doi.org/10.1007/bf01115489

Staff, J., Schulenberg, J. E., Maslowsky, J., Bachman, J. G., O'Malley, P. M., Maggs, J. L., & Johnston, L. D. (2010). Substance use changes and social role transitions: Proximal developmental effects on ongoing trajectories from late adolescence through early adulthood. *Development and Psychopathology*, *22*(4), 917–932. https://doi.org/10.1017/S0954579410000544

Stevens, A. (2010). *Drugs, crime and public health: The political economy of drug policy*. Routledge.

Valente, T. W., Gallaher, P., & Mouttapa, M. (2004). Using social networks to understand and prevent substance use: A transdisciplinary perspective. *Substance Use & Misuse*, *39*(10-12), 1685–1712. https://doi.org/10.1081/ja-200033210

Warr, M. (2002). *Companions in Crime: The social aspects of criminal conduct*. Cambridge University Press.

Warr, M., & Stafford, M. (1991). The influence of delinquent peers: What they think or what they do? *Criminology*, *29*(4), 851–866. https://doi.org/10.1111/j.1745-9125.1991.tb01090.x

Weatherburn, D. J., & Lind, B. (2001). *Delinquent-prone communities*.

Weber, M. (2019). *Economy and society: A new translation*. Harvard University Press.

Weisheit, R., & White, W. L. (2009). *Methamphetamine: Its history, pharmacology, and treatment*. Hazelden Publishing.

Wilson, W. J. (1987). *The truly disadvantaged: The inner city, the underclass, and public policy*. University of Chicago Press.

Wu, X., & Treiman, D. J. (2007). Inequality and Equality under Chinese socialism: The hukou system and Intergenerational occupational mobility. *American Journal of Sociology*, *113*(2), 415–445. https://doi.org/10.1086/518905

Yang, T., Li, F., Yang, X., Wu, Z., Feng, X., Wang, Y., Wang, X., & Abdullah, A. (2008). Smoking patterns and sociodemographic factors associated with tobacco use among Chinese rural male residents: A descriptive analysis. *BMC Public Health*, *8*(1), 248–255. https://doi.org/10.1186/1471-2458-8-248

Yang, X. Y. (2017). How community-level social and economic developments have changed the patterns of substance use in a transition economy? *Health & Place*, *46*(1), 91–100. https://doi.org/10.1016/j.healthplace.2017.05.009

Yang, X. Y., & Hendley, A. (2018). The gendered effects of substance use on employment stability in transitional China. *Health Sociology Review*, *27*(3), 312–329. https://doi.org/10.1080/14461242.2018.1495572

Yang, X. Y., Hu, A., & Schieman, S. (2019). Relative deprivation in context: How contextual status homogeneity shapes the relationship between disadvantaged social status and health. *Social Science Research*, *81*(1), 157–169. https://doi.org/10.1016/j.ssresearch.2019.03.011

Yang, X. Y., Kelly, B., & Yang, T. (2020). Peer association and Routine activities in sex worker Patronage among male migrant Workers. *Deviant Behavior*, *43*(3), 322–339. https://doi.org/10.1080/01639625.2020.1834339

Yang, X. Y., Kelly, B. C., & Yang, T. (2016). Together we have fun: Native-place networks and sexual risk behaviours among Chinese male rural-urban migrants. *Sociology of Health & Illness*, *38*(4), 559–575. https://doi.org/10.1111/1467-9566.12380

Yang, X. Y., & Yang, F. (2018). Acculturation versus cultural Retention: The Interactive impact of Acculturation and Co-ethnic ties on substance Use among Chinese Students in the United States. *Journal of Immigrant and Minority Health*, *20*(3), 546–560. https://doi.org/10.1007/s10903-017-0598-0

Young, A. M., Jonas, A. B., Mullins, U. L., Halgin, D. S., & Havens, J. R. (2013). Network structure and the risk for HIV Transmission among rural drug users. *AIDS and Behavior*, *17*(7), 2341–2351. https://doi.org/10.1007/s10461-012-0371-2

Young, J. (1971). The Subterranean world of play. In K. Gelder, & S. Thornton (Eds.), *The subcultures reader* (pp. 149–156). Routledge.

Young, J. T. N., Rebellon, C. J., Barnes, J. C., & Weerman, F. M. (2014). Unpacking the Black Box of peer Similarity in deviance: Understanding the mechanisms linking personal behavior, peer behavior, and perceptions. *Criminology*, *52*(1), 60–86. https://doi.org/10.1111/1745-9125.12029

Zhang, L., Zhu, J., Rui, B., Zhang, Y., Zhang, L., Yin, L., Ruan, Y., Qian, H.-Z., & Shao, Y. (2008). High HIV risk among Uigur minority ethnic drug users in northwestern China. *Tropical Medicine and International Health*, *13*(6), 814–817. https://doi.org/10.1111/j.1365-3156.2008.02071.x

Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and Truths about mediation analysis. *Journal of Consumer Research*, *37*(2), 197–206. https://doi.org/10.1086/651257

Zhou, X., Tuma, N. B., & Moen, P. (1996). Stratification Dynamics under state socialism: The Case of urban China, 1949–1993. *Social Forces*, *74*(3), 759–796. https://doi.org/10.2307/2580381

Zimmerman, G. M., & Messner, S. F. (2011). Neighborhood context and Nonlinear peer effects on adolescent violent crime. *Criminology*, *49*(3), 873–903. https://doi.org/10.1111/j.1745-9125.2011.00237.x

Author Biographies

Xiaozhao Y. Yang is an Associate Professor of medical sociology at Sun Yat-sun University. He studies the contextual influences on health behaviors among youths, and the stress-inducing social inequalities.

Brian C. Kelly is Professor of Sociology at Indiana University. His research focuses on contextual influences of health, primarily centered on substance use and mental health among adolescents and young adults.