Representation of adverse childhood experiences is associated with lower public stigma towards people who use drugs: an exploratory experimental study

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Abstract

Background

Stigmatising attitudes towards people who use drugs are pervasive amongst the public. We investigated whether public stigma was affected by presentation of a history of adversity, and how substance use was described.

Methods

A cross-sectional online study using a convenience sample, with a randomised 2 x 2 x 2 factorial design. Participants read one of eight randomly presented vignettes that described a fictional case history of substance use. In each vignette the gender of the subject (male or female), description of the subject's substance use ('addict' vs substance use disorder), and life history ('tough life' vs description of four adverse childhood experiences (ACEs)) were varied. Participants then completed an adapted version of the attribution questionnaire (AQ-9), which assessed stigmatising beliefs.

Results

Data were obtained from 502 participants (53.0% Female; mean age 36.5 ± 13.5 years). There was a significant effect of life history on AQ-9 scores (p = .012), and presentation of ACEs was associated with lower stigmatising attitudes.

Conclusion

Our findings suggest that describing the life histories of people who have experienced problems with substances may lead to less stigmatising public attitudes. Further research should explore the best ways to utilise this information to develop public-targeted anti-stigma interventions.

Introduction

Public stigma refers to attitudes and behaviours toward individuals of particular social groups, often a minority, who possess or are perceived to possess a characteristic that is contrary to a social norm (Goffman, 1974; Link & Phelan, 2006; Stafford & Scott, 1986). This can lead to devaluing of the characteristic, endorsement of stereotypes and labelling, and social status loss of the target group. Internalised stigma resulting from individual experiences or anticipation of enacted public stigma, can present barriers to personal, economic, and healthy development, and when endorsed are important sources of health and social inequity (Corrigan & Wassel, 2008; Link & Phelan, 2001).

Substance use is an example of a social behaviour that is differentially valued or devalued depending upon whether it conforms with socially approved patterns of use and norms (including which substance is used and how it is used) (Pennay & Measham, 2016; Sattler et al., 2017), and intersection with other characteristics such as gender, ethnicity, religion, health status, deprivation, and social class (Ahern et al., 2007; Atkinson & Sumnall, 2018; Farrugia, 2014; Järvinen & Demant, 2011; Kulesza et al., 2013; Pennay & Measham, 2016; Radcliffe & Stevens, 2008; Smith et al., 2016; UNODC, 2004). In accordance with socioecological models, stigmatising public attitudes are reinforced by (drug) policy, laws, societal structures, and the media, and may be reproduced through the practices of some institutions and professionals (da Silveira et al., 2018; Gilchrist et al., 2011; Russell et al., 2011; Skinner et al., 2007; Soh et al., 2019; Stangl et al., 2019; van Boekel et al., 2013; von Hippel et al., 2008). This can undermine provision, access, and the quality of drug treatment, and may reinforce discrimination and broader health and social inequity (Andersen & Kessing, 2019; Lancaster et al., 2017; Rivera et al., 2014; Smith et al., 2016). People who use drugs (PWUD), including those in receipt of treatment, report that perceptions and experiences of public and internalised stigma can lead to

reduced self-worth and label avoidance, and act as a barrier to treatment seeking and recovery (Biancarelli et al., 2019; Birtel et al., 2017; Chan Carusone et al., 2019; Luoma et al., 2007; Neale et al., 2011; Stringer & Baker, 2018).

This is of particular importance because problem substance use is associated with significant disease burden (Degenhardt et al., 2016; Degenhardt et al., 2013), and early treatment entry is protective against morbidity and mortality (Hickman et al., 2018; Pierce et al., 2016; Platt et al., 2016; Sordo et al., 2017). Stigma may also have adverse effects beyond clinical outcomes, leading to differential public and political support for health policies and criminal justice response preferences; barriers to employment; reduced housing and social support; and increased social distance with other community members (Corrigan & Nieweglowski, 2018; Earnshaw et al., 2019; Kelly & Westerhoff, 2010; Kulesza et al., 2016; Kulesza et al., 2015; Kvaale et al., 2013; Lloyd, 2013; Matheson et al., 2014; McGinty et al., 2018; Meurk et al., 2014; Schomerus et al., 2011; West et al., 2014).

A limited but diverse body of research has investigated some of the interacting determinants of public stigma towards PWUD (Lancaster et al., 2017; Lloyd, 2013). This has included a focus on the role played by media representations of PWUD (Atkinson et al., 2019; Atkinson & Sumnall, 2018, in press; McGinty, Stone, et al., 2019), the framing of substance use as a consequence of failings in personal morality or responsibility (MacCoun, 2013), subjugation of personal identities by pejorative labelling (e.g. 'addict'; 'junkie'; 'drug abuser') (Lancaster et al., 2017), unfamiliarity with the causes of substance use disorders (Lloyd, 2013), and laws and regulations that target behaviour that is perceived as 'deviant' or 'risky' (Kelly & Westerhoff, 2010; Lloyd, 2013; Room, 2005). Public attributes are also important, and factors such as education, political affiliation, 'folk explanations' of behaviour, support for punitive

drug policies, knowledge about substances, health literacy, and personal familiarity with PWUD and people receiving drug treatment are associated with public stigma, empathy and compassion (Corrigan et al., 2001; Kennedy-Hendricks et al., 2017; Rusch et al., 2012; Sattler et al., 2017). However, public attitudes towards PWUD change over time, and can sometimes be contradictory (Schomerus et al., 2014). For example, a recent online survey undertaken with a representative sample of the general public in Scotland (The Scottish Government, 2016) suggested that despite high levels of sympathy towards people with 'drug dependence' and support for public funding of drug treatment, 50% of respondents did not wish to have someone who had ever been dependent on drugs as their neighbour; 46% thought that residents were right to fear a drug treatment service in their neighbourhood, and 38% disagreed that people with a history of drug dependence could be trusted as a baby sitter.

Stigmatising attitudes and other biases towards PWUD have been investigated using experimental and quasi-experimental studies. These have shown that the use of language or certain popular terms to describe PWUD (e.g. 'substance abuser'; 'junkie' or 'addict' compared with terms such as 'person with a substance use disorder'); or highlighting culpability and controllability of personal choice, the perceived 'dangerousness' of PWUD, or the relapsing nature of substance use disorders can induce cognitive biases that perpetuate stigmatising attitudes (e.g. Ashford et al. (2018a, 2018b); Ashford, Brown, et al. (2019a, 2019b); Ashford, Brown, McDaniel, et al. (2019); Kelly et al. (2010); Kelly and Westerhoff (2010); Sattler et al. (2017)). For example, Ashford and colleagues (2018b) found that using measures of implicit- (the Go/No Association Task; a measure of social cognition that assesses automatic associations between concepts (e.g., substance use) and attribute (e.g., neutral objects) categories), and explicit (rating of vignettes) bias in a study with the general public, terms such as 'substance abuser' and 'addict' were strongly associated with greater self-rated social

distancing or negative associations towards PWUD compared with corresponding 'neutral' counter-terms (e.g. substance use disorder).

In these types of study, depicted characteristics of subjects are also important, with less stigmatising beliefs reported towards high socioeconomic status individuals, or women compared to men (Kennedy-Hendricks et al., 2016; Sattler et al., 2017). Age is also an important factor, and representation of older adults leads to more stigmatising views, as this group is considered to be in better control of their substance use choices than younger PWUD (Sattler et al., 2017). In contrast, depictions of (structural) barriers to treatment access, successful treatment outcomes, or phrasing that highlights similarities between medications used in drug treatment (e.g. opioid agonist therapies) with other types of pharmacotherapies, leads to reduced social distance (an indicator of stigma), a greater belief in the effectiveness of treatment, less willingness to discriminate, and less support for punitive criminal justice policies (Ashford et al., 2018b; Kennedy-Hendricks et al., 2016; McGinty et al., 2015; Robinson & Adinoff, 2018). One study that presented co-occurring depression with substance use elicited greater pity and less anger and blame towards PWUD (Sattler et al., 2017). However, a meta-analysis of studies examining the effects of providing biogenetic explanations for mental health disorders, including alcohol use disorders, found that whilst this type of framing was associated with a reduction in participant ratings of personal blame, it was also associated with increased pessimism about successful treatment outcomes and increased endorsement that affected groups were dangerous, and had no effect on social distance ratings (Kvaale et al., 2013).

In addition to direct bio-genetic explanations, there is increasing understanding of the association of traumatic and adverse childhood experiences (ACEs) with the aetiology of

substance use, with multiple ACE exposures being associated with increased likelihood of development of substance use disorders ((Dube et al., 2003; Hughes et al., 2017; Hughes et al., 2019; Shin et al., 2018)). ACEs are harmful events (e.g. parental imprisonment, parental substance use) that lead to exposure to chronic stress, resulting in impaired cognitive, social, and emotional functioning. Although these stress responses are biological in origin, they are usually discussed in relation to description of the adverse event rather than neurodevelopmental pathways, and as these precipitating events are experienced in childhood environments, they are out of the control of the individual. Therefore, framing determinants of substance use in relation to ACEs may lead to reduced stigmatising attitudes due to a perceived association with a lack of controllability (i.e. external vs internal control of behaviour), and increased compassion for affected individuals (Sattler et al., 2017; Witte et al., 2019). However, to the best of our knowledge, whilst some mental health stigma research has incorporated this type of framing into assessments of the effects of language utilisation (Angermeyer et al., 2013), there has been no similar work with respect to substance use (*cf* general socio-environmental determinants; Meurk et al. (2014)). Considering the prominence of references to ACEs in many contemporary public health and social care strategies (e.g. ACMD (2018); The Scottish Government (2018)) it is important to investigate whether explanations of substance use that draw upon ACEs also have an impact upon stigmatising attitudes towards PWUD.

We conducted an exploratory study that aimed to further investigate the effects of framing of substance use and specific terminology to describe PWUD on public stigma. Based on the previous research described above, which has primarily been conducted in the US, we were particularly interested in the effects of labelling of substance use and reference to ACEs in a UK sample. We hypothesised that a description of a substance use case history that i) depicted a female subject; ii) used a neutral description of substance use (substance use disorder vs

'addict'); and iii) included details of childhood adversity, would elicit less explicit stigmatising attitudes in a general population sample.

Methods

Design

The study utilised a 2 (male x female) x 2 (addicts, SUD) x 2 (tough life, history) factorial design, and participants completed an anonymous online questionnaire.

Participants

A convenience sample was recruited from the UK general public. Inclusion criteria were people who were UK residents and aged over 18 years, and the questionnaire included screening checks. Participants were recruited through advertisements on a research participant recruitment portal website (*Call for Participants*), a University student research participant database, social media (*Facebook*, *Twitter*), and snowball sampling. Recruitment materials mentioned that this was a study about substance use, but not that it was investigating stigma, and this was only revealed in the survey debriefing. An *a priori* power calculation (G*Power 3.1; Faul et al. (2007)) to detect a medium effect size ($f = 0.25$; power 0.95), estimated a minimum sample size of 425 was required. Overall, 560 survey attempts were recorded, but only those participants providing complete data on the primary outcome were retained. The final sample comprised 502 participants (89.6% of attempts; $n = 266$ (53.0%) Female; mean age 36.5 ± 13.5 years).

Materials

Vignettes

Eight short fictional vignettes were prepared, based on a standard template. For each of three factors, one of two levels were presented:

1. The gender of the subject (*Jane* or *John*) (*gender* in factorial analysis);

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2. The term used to describe the subject's substance use (*an addict* [addict] or *substance use disorder* [SUD]) (*use*);

3. Inclusion of ACEs (*had a tough time* [tough] vs suffered physical abuse, neglect, mother victim of domestic violence, father imprisoned [ACE]) (*history*).

The vignette template is reproduced below. Grammar, clauses, and minor unmanipulated language elements were adjusted in each vignette for readability (see Supplementary Material S1 for full texts):

[Gender] *is aged 30, homeless, and has been/has had a* [use] *for about 18 months. He/She became/developed* [use] *after he/she became friends with people on the streets who were already using. When he/she was younger he/she* [history]. *He's/She's been in and out of prison over the last year for a series of offences related to his/her* [use]*, and has ended up in A and E a few times as well.* [Gender] *is not currently attending treatment services for his/her drug use.*

The eight vignette combinations were:

1. *Jane – Addict – Tough*

2. *Jane – Addict – ACE*

3. *Jane – SUD – Tough*

4. *Jane – SUD – ACE*

5. *John – Addict – Tough*

6. *John – Addict – ACE*

7. *John – SUD – Tough*

8. *John – SUD – ACE*

For all vignettes, Flesch Reading Ease score was between 63 and 80, indicating easy reading comprehension (Supplementary material). Vignettes were piloted with colleagues of the researchers to confirm comprehension and distinction between conditions.

The primary outcome measure was stigma score, assessed using an adapted version of the 9-item Attribution Questionnaire (AQ-9; Corrigan et al. (2003)). This scale was originally developed to assess stigma towards people with mental illness in accordance with attribution theory, and includes items across subdomains of blame (*I think that it is X own fault that s/he is in his/her present condition*); anger (*How angry do you feel at X?);* pity (*I feel pity for X*), help (*How likely is it that you would help X?);* dangerousness (*How dangerous do you feel X is?),* fear (*How scared of X do you feel*?); avoidance (*I would try to stay away from X*); segregation (*I think it is best for X's community if s/he were confined in a hospital*); and coercion (*How much do you agree that X should be forced into drug treatment even if s/he does not want to?*). Individual items are scored on a nine-point Likert scale (1 not at all to 9 very much), and a total stigma score calculated (range 9-81). Higher scores represent higher total stigmatising attitudes. The original instrument was developed to assess stigma towards people with mental illness, and so in the present study the *coercion* question was changed to refer to treatment rather than a psychiatric hospital. In this study, Cronbach's α = 0.84, indicating a high level of internal consistency.

Additional measures

Additional measures were created from existing tools, to assess participants' attitudes to people who are homeless, and PWUD. Attitudes towards people who are homelessness were assessed through three questions taken from the Scottish Social Attitudes Survey General Attitudes to Homeless Module (The Scottish Government, 2006). These were *Most homeless people have*

just been unlucky in their lives; *Most homeless people could find somewhere to live if they really tried* (reverse scored); *Many people say they are homeless just to try and get a house from the council* (reverse scored). Questions were scored on a Likert scale (1 Strongly Disagree to 5 Strongly agree), with higher scores representing more positive attitudes. In the present study, Cronbach's α = 0.60, indicating an acceptable level of internal consistency.

Attitudes towards PWUD were assessed through 19 questions taken from a public attitudes to drugs survey (Singleton, 2010), originally adapted from the Attitudes to Mental Illness survey (Singer et al., 2016), and utilised in the 2016 Scottish Government's Public Attitudes Towards People with Drug Dependence and People in Recovery survey (The Scottish Government, 2016) (hereafter referred to as attitudes to people in recovery). Questions were scored on a five point Likert scale (1 Strongly Agree to 5 Strongly disagree) and assessed attitudes towards people with a history of drug dependence (e.g. *Parents should not let their children play with the children of someone with a history of drug dependence*; *People with a history of drug dependence are too often demonised in the media* (reversed scored); *Increased spending on helping people overcome drug dependence is a waste of money*). Principal components analysis identified four factors (blame and intolerance; sympathy and care; fear and social exclusion; acceptance and integration) (Singleton, 2010); but as the scale score was used as a covariate in the current analysis, only the total score was utilised. Higher total scores represented more negative attitudes. In the present study, Cronbach's α = 0.86, indicating a high level of internal consistency.

Participants were also asked to indicate if i) they; and ii) a family member/close friend, had ever received drug treatment (coded 0 = no; 1 = yes). Finally, they self-rated their knowledge of the reasons why some people developed problems with substances and others do not (10-

point scale), and if they had seen media reports about people who have experienced problems with substances in the previous six months. Those who positively endorsed this item were asked whether they judged these to be supportive, negative, or balanced in their representation of PWUD.

Procedure

The survey was hosted on the Qualtrics platform (Qualtrics, Provo, UT, USA) and took approximately 15 minutes to complete.

After reading the study information and providing consent, participants were required to complete two screening questions (UK residence; age > 18 years) before proceeding. Participants completed questions on demographics (age, gender, education, ethnicity, employment); substance use history (lifetime and last year use of a number of substances); and voting preference (main UK political parties; recoded into *left*; *right*; *centre* parties for analysis).

Participants were then randomised to receive one of the eight vignettes (equal distribution) described above. After presentation the vignette, participants were asked to complete the AQ-9. Next, participants were asked to complete the additional measures.

The research was approved by Liverpool John Moores University Research Ethics Committee.

Analysis

The primary analysis was undertaken using factorial ANCOVA. The dependent variable was AQ-9 score, fixed factors were *gender* (reference category = *male*), *use* (reference category = *abuse*), and *history* (reference category = *tough*). Covariates were scores for self-rated knowledge about substance use, attitudes towards people in recovery, and attitudes towards people who are homeless. These covariates were chosen on the basis of previous research showing associations between these views, contact with people who use substances, or familiarity with drug-related topics on stigma, and because the subject of the vignettes was depicted as experiencing homelessness, which is a stigmatised characteristic (Addison & Thorpe, 2004; Brown, 2011; Corrigan et al., 2009; Goodyear et al., 2018; Lloyd, 2013; Lloyd et al., 2017; Sattler et al., 2017). Substance use in people experiencing homelessness has been shown to further exacerbate public stigma towards this group, and social attitudes surveys indicate sympathy towards affected groups in the general population depends on demographic characteristics (Alexandrescu, 2020; Atkinson et al., 2019; The Scottish Government, 2006). Preliminary analysis showed all covariates were independent of condition effects (see Table 1).

This was followed by an exploratory hierarchical linear regression with AQ-9 score as the dependent variable, and other collected variables as independents. Condition was entered into block 1; demographics and political orientation in block 2; and attitudes towards people in recovery, self-rated knowledge about substance use, and personal experience of treatment or knowing someone who had received treatment into block 3.

Alpha was set at .05, and all analyses were undertaken with jamovi (jamovi project (2020) v1.2.9.0).

Results

Sample demographic and other descriptive data are presented by randomised condition in **Table 1.** Across the sample, a higher proportion self-identified as female (compared with 50.8% in 2011 UK census); self-identified as White British (80.6% in 2011 census); held a University degree (42.0%, ONS Labour market survey 2017), and who voted for left wing or centre parties in the 2019 UK general election (approximately 46.3% and 15.4% respectively; based on seat data from Electoral Commission UK) than the UK general population. Reported lifetime substance use was also much higher than the general population (Crime Survey for England and Wales 2018/19). However, there was a much lower proportion of people who voted for right wing parties in the 2019 election (45.6%). Comparing across conditions, groups were balanced. However, a higher number than expected number in the *John – SUD – Tough* and *John – SUD – ACE* conditions reported a lifetime use of crack cocaine and heroin compared to the other conditions.

INSERT TABLE 1 HERE

The ANCOVA model was significant, $\eta^2 = 0.491$; F (12,438) = 35.21; p < .001 (see Table 2). The covariates attitudes to homelessness (F (1,438) = 17.91, p < 0.001); attitudes to recovery (F (1,438) = 155.31, p < 0.001); self-rated knowledge (F (1,438) = 17.79, p < 0.001); and having a family member or close friend who had received drug treatment (F (1,438) = 7.27, p = 0.007) were all significantly related to AQ-9 score. Controlling for covariates, there was a significant effect of the history condition on AQ-9 score (F (1,438) = 6.42, p = 0.012). Presentation of the ACE condition was associated with lower scores (B = -1.91), suggesting less stigmatising attitudes.

INSERT TABLE 2 HERE

The regression analysis predicting AQ-9 scores, and model parameters are presented in **Error! Reference source not found.**. The final model was statistically significant $R^2 = 0.537$; F (13, 377) = 33.62, p < .001.

In the first step, none of the predictors were significant. In the second step, younger age (β = -.30, p < 0.001) was associated with lower AQ-9 scores, and right-wing political preference with higher scores (β = .15, p < 0.001); indicating less, and more stigmatising attitudes respectively. In the final step, the *history* condition presentation of ACEs (β = -.09, p < 0.05); younger age (β = -.21, p < 0.001); more positive attitudes towards people who are in recovery (β = .52, p < 0.001), or who are homeless (β = -.14, p < 0.001); higher self-reported knowledge about drug use problems (β = -.14, p < 0.001); and having a family member or close friend who had received drug treatment (β = -.07, p < 0.05), predicted lower AQ-9 scores, indicating less stigmatising attitudes.

INSERT TABLE 3 HERE

Discussion

In this exploratory study we investigated whether gender, presentation of a history of childhood adversity (ACEs), and the labelling of substance use in a series of manipulated vignettes were associated with differences in stigmatising attitudes towards PWUD in the general public. Our study hypotheses were partially supported. After controlling for pre-existing attitudes towards people in recovery and people experiencing homelessness, self-rated knowledge, and personal contact with people in receipt of drug treatment, we found that presentation of ACEs was associated with less stigmatising attitudes towards PWUD. In contrast, manipulation of gender in the vignettes (male vs female), or the use of the term 'addict' rather than referring to the subject having a substance use disorder, were not associated with differences in attitudes.

As hypothesised, description of specific examples of childhood adversity were associated with lower stigma scores compared to presentation of a general description of adversity (i.e. a 'tough life'). The primary outcome measure used in this study, the AQ-9, was developed in accordance with attribution theory, which suggests that public stigma is based on the emotional responses that people experience as a result of their beliefs about the causes, controllability, and personal responsibilities associated with illness or behaviour (Corrigan et al., 2003; Weiner, 1995). Causal assumptions that attribute mechanisms underlying an outcome to internal control processes are associated with judgments that the individual is personally responsible for the outcome, and that the outcome could have been avoided through different choices. This increases the likelihood of preference for discriminatory and punitive responses to the individual, decreases pity, and underlies stigmatising attitudes (Corrigan et al., 2003).

Survey research has shown that the public believes that there is a high level of controllability and choice over substance use disorders, and that this is greater than other physical or psychiatric conditions (Corrigan et al., 2009). Reviews of public preference for different explanations of substance use and mental ill health have concluded that people place greater emphasis on adverse life events and psychosocial explanations than biogenetic ones (Konkolÿ Thege et al., 2015; Kvaale et al., 2013; Larkings & Brown, 2018; Read et al., 2006; Schomerus et al., 2014). Experimental manipulations of external factors that affect perceptions of controllability and personal responsibility for substance use, may therefore lead to reduced stigma (Sattler et al., 2017). This is the first study that has incorporated reference to one set of external factors, ACEs, into assessments of stigma towards PWUD. To the best of our knowledge, there have been no explorations of public attitudes towards people experiencing harmful outcomes associated with ACEs more generally, but previous studies using similar vignette methodologies to ours have produced mixed results. Witte and colleagues (2019) found that manipulations of the perceived controllability of, or responsibility for persistent substance use were not associated with changes in stigma rating. In contrast, Goodyear and colleagues (2018) incorporated a similar description of controllability to Witte, but when a subject's opioid use disorder was presented as being a direct consequence of non-medical use, it was rated more negatively than when use was associated with iatrogenic effects of analgesic prescription after surgery. Unlike these two studies, we referred to substance use that was set within a context of uncontrollable adverse events that occurred in childhood (ACEs), and we did not draw direct links between the two. Providing further detail in our vignettes about the choice to use substances or other factors associated with persistent and continued use may have yielded different findings. The differences between these three studies may also partly be accounted for by the use of three different sets of outcome measures. Witte assessed social distancing (the Social Distance Scale for Substance Users) and assumed subject attributes (the

Assumed Attributes Inventory), whilst Goodyear included the Perceived Stigma of Addiction Scale, a measure that assesses perceptions of public stigma towards PWUD. Examining individual item scores on the AQ-9 (Supplementary material S2), we found no effects of use of the two terms on the *blame* item, which suggested that the observed effect may have been operating through a different attribution mechanism. It would be useful to incorporate additional ratings of perceptions of responsibility and controllability in follow up studies to try and better understand mechanisms underlying our observed effects.

Journal editors, authors, and advocacy organisations have proposed the use of 'person-first' language and medically neutral terminology and framing to describe substance use as one means of reducing public stigma towards PWUD (e.g. Botticelli and Koh (2016); Broyles et al. (2014); ISAJE. (2015); Kelly et al. (2016); Robinson (2017); Saitz (2016); Scholten et al. (2017); UKDPC (2010); Wakeman (2017)). This is because much of the language that is popularly used can propagate stigma through reinforcement of target group devaluation (Kelly & Westerhoff, 2010; Wakeman, 2017). Previous work has found that representing SUD as an illness or brain disease has generally shown no effect on stigmatising beliefs (Meurk et al., 2014; Piras et al., 2016). This may be because these types of deterministic explanations suggest that the condition is intrinsic to the affected person or group, reinforcing fundamental 'differentness', and associations with prognosis pessimism, which indirectly communicates a message of hopelessness (Kvaale et al., 2013). Similarly, the findings of our study suggested that the use of another formal medical term, SUD (Scholten et al., 2017), did not affect stigma score compared with the popular, but pejorative term, 'addict'. However, this finding was in contrast to the earlier findings of Goodyear and colleagues (2018) who also used a vignette methodology, and Ashford and colleagues who through a series of studies using implicit association tasks, found that reference to SUD decreased negative implicit bias towards PWUD compared with labels such as 'addict' or 'substance abuser'(Ashford et al., 2018a, 2018b;

Ashford, Brown, et al., 2019a; Ashford, Brown, McDaniel, et al., 2019). Of note, there was no effect of different labelling using an explicit measure in one study (the Bogardus Social Distance Scale), compared to a reduction in negative association when using an implicit test (Ashford et al., 2018b). Other stigma studies that have compared implicit and explicit measures have yielded discrepant findings, with the former approach suggested to be less subject to social desirability biases and better representing behaviours that are difficult to control consciously (Kulesza et al., 2016). Therefore, using implicit measures in follow-up studies may be instructive. Kelly and colleagues (2010a; 2010b) also reported using explicit assessments that reference to substance 'abuse' rather than SUD was associated with beliefs about personal culpability for substance use, and greater support for punitive responses. This suggests that the comparison label might be an important methodological feature, with 'abuse' being a more salient label than 'addiction'. Furthermore, as most research in this area has been undertaken in the US, cultural and geographical differences in the valence of the word 'addict', or social norms and public attitudes to substance use more generally may also be important (Room et al., 2001).

We did not detect a gender effect as hypothesised. Previous work has found a main effect of gender, with males who use drugs having higher stigma ratings than females, possibly due to being viewed as more dangerous and less vulnerable (Goodyear et al., 2018; Sattler et al., 2017). Goodyear and colleagues (2018) highlighted the importance of considering the interaction effects of gender, particularly with reference to the use of newer and more unfamiliar terms to describe substance use. They reported that a female depicted with an opioid use disorder was rated as more dangerous than one with an addiction, and suggested that this might have been because the label 'disorder' suggested greater loss of control, and reinforced social norms that are more disapproving towards those who violate gender roles (i.e. fewer women use substances than men) (Sorsdahl et al., 2012). We did not find a gender x use

interaction, but the subject of our vignette was depicted as being homeless, a highly stigmatised characteristic (Belcher & DeForge, 2012; Johnstone et al., 2015; Phelan et al., 1997). Gender-specific stigma may therefore not have been perceived as being substantially different between subjects represented as homeless (Markowitz & Syverson, 2019).

Briefly, in our exploratory regression analysis of respondent characteristics we found that older age, more positive attitudes towards people who are homeless or in recovery, and personal or family/friend experiences of drug treatment were associated with lower stigma scores. This is broadly in line with previous work suggesting that familiarity with substance use and greater contact with people who use substances is associated with less stigma (Sattler et al., 2017), and it is unsurprising that more positive general attitudes towards the group depicted in the vignette would be associated with less stigma, independently of the experimental manipulation. Reviews of stigma research have found that across a range of topic domains there is an unclear relationship between age and attitudes (Sattler et al., 2017).

Further work examining representations of the intersection of life history, personal characteristics, and other substance use and treatment labels on public perceptions is important in light of differential stigma towards population subgroups (e.g. increased stigmatising attitudes towards low- compared with high socioeconomic status women who use drugs) (Goodyear et al., 2018; Kulesza et al., 2013; Lloyd, 2013). This field of research should also draw on specific examples of the language used to describe PWUD (e.g. media reports, policy documents) and contemporary drug topics (e.g. supervised drug consumption rooms; heroin assisted therapy; drugs and criminality) in public discourse. This is because language choices in studies of this type may not necessarily reflect changing public and professional use, pejorative slang, or framing used in local and national debates (Atkinson & Sumnall, 2018; McGinty, Stone, et al., 2019; Radcliffe & Stevens, 2008; Wincup & Monaghan, 2016).

Furthermore, unlike the single written exposure in this study, public discourse on drugs is pervasive, presented through multiple media, including the use of visual imagery and oral testimony, and draws upon particular forms of expertise (Alexandrescu, 2020; Atkinson et al., 2019; Ayres & Jewkes, 2012; Ayres & Taylor, 2020; Linnemann & Wall, 2013). It would therefore be useful to examine repeated exposures to simulated 'real-world' representations of PWUD that better reflect the agenda-setting and framing seen in popular media (McGinty, Kennedy-Hendricks, et al., 2019).

Better understanding of the factors that influence stigmatising public attitudes may help in the design of strategies aimed at reducing stigma toward PWUD, particularly through media reporting of drug-related topics (Livingston et al., 2012). A number of campaigns have been developed that work with media professionals to change representation of drug use and PWUD. Recent examples include the Australian *Lives of Substance* (Fraser et al., 2016), and the US *Changing the Narrative* projects (https://www.changingthenarrative.news/). The Associated Press Stylebook (2019) which provides guidance to journalists and those working in the US print media promotes the use of 'person-first' and medically neutral language (Botticelli & Koh, 2016), and similar resources have been developed in other countries (O'Dowd, 2018; UK Drug Policy Commission, 2012). Reviews of interventions designed to decrease public and professional stigma towards groups including PWUD, have identified limited evidence (Lancaster et al., 2017; Livingston et al., 2012; Maiorano et al., 2017), but suggest that initiatives such as contact-based professional training, and guidelines published by authoritative institutions can be effective. However, the use of person-centred and respectful language in media *per se* does not necessarily reduce prejudice and discriminatory actions, as the sources of stigma are complex (Stangl et al., 2019), and adoption of neutral language may mask otherwise negative framing and selective representation of PWUD. Furthermore,

although people in drug services, their family members, and treatment professionals all rate stigmatising terms such as 'addict' negatively (Ashford, Brown, et al., 2019b), some PWUD prefer to refer to themselves using these types of terms, including as part of the process of developing a recovery identity, although they do not wish others to use them (Pivovarova & Stein, 2019).

The current study has a number of limitations that need to be considered when interpreting the results and practical application. Participants were randomly assigned to conditions, but as this was an exploratory study using convenience sample, our findings may not be generalisable to the general population. Although conditions were well matched, there were differences in demographics between our sample and the UK general population in terms of education level (more people with University degrees) and voting preference (a majority voted for left-wing parties). In additon to reasons discussed earlier, sample characteristics may be one important explanation as to why we didn't find hypothesised effects on gender and substance use terminology, as this sample may have had lower baseline levels of stigma towards PWUD than the general population. The authors' social media networks were used as one method of recruitment for this study, and study adverts were further disseminated through secondary distribution. Although we were unable to determine what proportion of participants were recruited through these platforms, it is likely that we oversampled people who have a particular interest in drug topics, and those who may hold particular attitudes towards PWUD because of social- and professional network homogeneity. This is reflected in levels of self-reported substance use, and personal or close family/friend experience of drug treatment that were higher in this study than those estimates reported in national general population surveys (Home Office, 2019; The Scottish Government, 2016)), which is important as familiarity with substance use (through direct or indirect experience) can influence stigma towards PWUD (Lloyd, 2013). There has been no directly comparable survey research on sample

characteristics previously undertaken in the UK on this topic, but other survey findings may be informative. For example, a recent representative UK opinion poll found greater support for more health-orientated and less punitive responses to substance use in people who identified as being more politically left wing or liberal (YouGov & CDPRG, 2019), and research from the US found less support for health orientated policies such as drug consumption rooms and needle and syringe programmes as people who identified as being politically right wing.

Taken together this highlights that future work should therefore replicate and extend the study with a sample that is better representative of the general population. However, we utilised an explicit measure of stigma that relied on participants being willing to report negative beliefs and attitudes. However, this would be predicted to bias our results towards the null, and therefore the impact of language in the general population could conceivably be larger than we found. We also do not know if changes in stigmatising attitudes are associated with corresponding changes in discriminatory behaviour, and this would be important to follow up. Lastly, the public (and health professionals) report more positive attitudes towards people who are presented as being in recovery or who are actively receiving treatment from substance use disorders than those who are not (McGinty et al., 2015; Rao et al., 2009). In our vignettes we presented a subject who was not attending treatment services in order to reduce the number of comparisons. Presentation of treatment attendance may therefore have affected results obtained and should be explored.

Conclusion

Representations of substance use that refer to relevant childhood adversity experienced by some PWUD may lead to less stigmatising public attitudes towards them. This knowledge can contribute to the development of anti-stigma campaigns, and strategies to foster public support for drug policy actions that support people who use drugs. Further work is required to better

understand the potential benefits of using neutral language to describe substance use disorders, and whether this leads to fewer discriminatory actions. Although we found no evidence that this led to less negative attitudes in the current study, findings from other research suggests that neutral phrasing should not be discouraged.

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Table 1 Participant characteristics by randomised condition.

	Jane – Addict – Tough (n=65)	Jane – Addict – ACE (n=63)	Jane – SUD – Tough (n=63)	Jane – SUD – ACE (n=62)	John – Addict – Tough (n=63)	John – Addict – ACE (n=64)	John – SUD – Tough (n=61)	John – SUD – ACE (n=61)	All participants (N = 502)	Between group difference (p value)
Age	37.9 ± 14.0	37.4 ± 13.3	35.2 ± 13.8	36.9 ± 14.0	36.7 ± 14.9	36.5 ± 12.6	34.8 ± 11.8	36.8 ± 13.5	36.5 ± 13.5	$F_{7,210}= .39$ (.909)
Female (%)	47.7	57.1	58.7	48.4	60.3	48.4	57.4	45.9	53.0	$X^2_7 = 6.11$ (.527)
Degree or above (%)	68.8	66.7	61.9	66.1	66.7	65.1	54.1	60.7	63.8	$X^2_7 = 4.16$ (.761)
White/White British (%)	93.8	93.7	87.3	91.5	92.1	93.7	96.7	90.2	92.4	$X^2_7 = 4.55$ (.714)
Employment (full/part time) (%)	67.8	60.3	61.9	56.5	62.9	58.7	60.7	50.8	59.4	$X^2_7 = 2.66$ (.915)
Voting preference (%)										
Left wing	87.5	68.4	75.0	73.1	77.4	57.4	88.5	79.6	75.8	$X^2_7 = 2.96$ (.889)
Centre	10.7	19.3	21.2	17.3	18.9	25.9	7.7	13.0	16.7	$X^2_7 = 2.70$ (.911)
Right wing	1.8	12.3	3.8	9.6	3.8	16.7	3.8	7.4	7.4	$X^2_7 = 3.52$ (.8.33)
Received drug treatment - Family member/close friend (%)	36.9	34.9	41.2	33.9	39.7	51.6	39.3	42.6	40.0	$X^2_7 = 7.43$ (.386)
Received drug treatment - self (%)	7.7	4.8	6.3	3.2	9.5	6.3	7.2	9.8	8.0	$X^2_7 = 9.67$ (.208)
Lifetime use of drugs (%)										
Amphetamines	38.5	34.9	36.5	41.9	39.7	35.9	41.0	44.3	39.0	$X^2_7 = 1.93$ (.964)
Alcohol	98.5	92.1	87.3	93.5	92.1	89.1	91.8	96.7	92.6	$X^2_7 = 2.94$ (.891)
Cannabis	81.5	77.8	71.4	80.6	73.0	75.0	78.7	82.0	77.5	$X^2_7 = 2.21$ (.783)
Powdered cocaine	41.5	52.4	42.9	56.5	50.8	48.4	50.8	62.3	50.6	$X^2_7 = 7.22$ (.407)
Crack cocaine	6.2	1.6	6.3	3.2	14.3	4.7	16.4	13.1	8.8	$X^2_7 = 25.04$ (.001)
MDMA/Ecstasy	52.3	52.4	42.9	61.3	41.3	50.0	50.8	55.7	50.6	$X^2_7 = 7.22$ (.407)
Heroin/methadone	10.8	7.9	11.1	11.3	15.9	12.5	26.2	21.3	14.5	$X^2_7 = 13.29$ (.065)
Prescription drugs	30.8	36.5	30.2	35.5	39.7	31.3	44.3	44.3	36.5	$X^2_7 = 6.06$ (.532)

Self-reported knowledge about substance use problems (mean ± SD)	7.0 ± 2.0	6.6 ± 1.8	6.5 ± 2.0	6.9 ± 2.0	7.1 ± 2.1	6.9 ± 2.0	7.3 ± 1.6	7.0 ± 1.8	6.9 ± 1.9	$F_{7,197}$= 1.282 (.261)
Attitudes to people in recovery	36.1 ± 11.5	39.2 ± 10.3	36.4 ± 9.2	35.6 ± 11.2	36.0 ± 9.6	35.5 ± 9.8	36.1 ± 10.6	36.6 ± 11.0	36.1 ± 10.4	$F_{7,202}$= .744 (.635)
Attitudes to people who are homeless	12.4 ± 2.3	12.0 ± 2.1	12.3 ± 2.5	12.6 ± 2.0	12.6 ± 2.0	12.2 ± 2.1	12.0 ± 2.22	12.7 ± 2.0	12.4 ± 2.2	$F_{7,212}$= .953 (.467)
AQ-9 Score	24.7 ± 12.8	25.3 ± 10.1	27.0 ±10.4	24.0 ± 11.6	27.6 ±10.7	24.0 ± 11.5	25.5 ± 11.9	24.8 ± 10.4	25.4 ± 11.2	$F_{7,212}$= .388 (.502)

Table 2 Total AQ-9 score - results of factorial ANCOVA (*df* 12,438).

Parameter	F	p	B	SE
Factors				
Gender	1.53	.217	-.94	.76
Use	1.28	.259	.85	.75
History	6.42	.012	-1.91	.75
Gender x Use	.76	.383	1.32	1.51
Gender x History	.22	.637	-.71	1.51
Use x History	.49	.480	1.07	1.52
Gender x Use x History	.63	.427	-2.40	3.01
Covariates				
Attitudes to Homelessness	17.91	<.001	-.90	.21
Attitudes to Recovery	155.31	<.001	.56	.04
Self-rated knowledge	17.79	<.001	-.87	.21
Received drug treatment - Family member/close friend	7.27	.007	-2.15	.80
Received drug treatment - self	.03	.865	-.23	1.38

Table 3 Summary of hierarchical regression for variables predicting AQ-9 score. R^2 step 1 = 0.007; ΔR^2 step 2 = 0.148, ΔR^2 step 3 = 0.537, both p = 0.000.

Variable	B	SE b	β	p
Step 1				
Intercept	25.47	1.11		
Factors				
Gender	-.41	1.04	-.02	.697
Use	.05	1.04	.02	.962
History	-1.78	1.05	-.08	.090
Step 2				
Intercept	37.68	2.23		
Factors				
Gender	-.41	1.04	-.02	.697
Use	.05	1.04	0.5	.962
History	-1.78	1.05	-1.70	.090
Age	-.25	.04	-.30	.000
Participant Gender (ref = male)	-1.41	101	-.07	.167
Education (ref < degree)	-1.88	1.15	-.08	.103
Voting (ref = left wing)				
Right	6.63	2.17	.15	.002
Centre	-.69	1.40	-.02	.622
Step 3				
Intercept	28.76	4.63		
Factors				
Gender	-.94	.78	-.04	.227
Use	.60	.77	.03	.439
History	-2.00	.78	-.09	.012
Age	-.17	0.3	-.21	.000
Participant Gender (ref = male)	-.76	.77	-.04	.321
Education (ref < degree)	-.60	.87	-.03	.495
Voting (ref = left wing)				
Right	-1.19	1.68	-.03	.478
Centre	-.70	1.04	-.02	.504
Attitudes to Homelessness	-.75	.22	-.14	.001
Attitudes to Recovery	.57	.05	.52	.000
Self-reported knowledge	-.80	.21	-.14	.000

Received drug treatment - Family member/close friend	-1.60	.83	-.07	.053
Received drug treatment - self	.93	1.54	.02	.546