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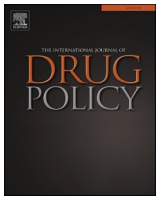

Research Paper

Media representation of methamphetamine-related deaths: Exploring links to public stigma and support for harm reduction

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ABSTRACT

Background: Drug-related deaths are a significant and growing public health concern. In Australia, meth/amphetamine is the most common stimulant drug involved in unintentional drug-related deaths. People who use meth/amphetamine often experience stigma and are negatively portrayed in the media. Considering the influence of media on public attitudes, which in turn influences policy, this study aimed to examine the relationships between media representations of drug-related deaths and stigma towards the people who use drugs along with attitudes towards harm reduction policy.

Methods: Nationally representative sample of Australians (N = 1490) participated in an online experimental study where they were randomised to one of eight simulated news stories depicting a drug-related death. Each news story varied by drug type (methamphetamine or alternative stimulant (MDMA, 'ecstasy')), age of the character depicted (younger or older), and gender of the character depicted (female or male). Stigma towards the character depicted and support for harm reduction was assessed. Data were analysed using MANOVA.

Results: Among the sample (average age = 48.5 years (SD 17.73); 54.7% female). Stigma was higher towards depictions of older people compared to younger people ($p < .001$) and those who had used methamphetamine compared to MDMA ($p < .001$). No significant main effects on support for harm reduction were found.

Conclusion: Certain characteristics in news stories about drug-related deaths elicit higher stigma towards the depicted person. Thus, improving how the media report and frame drug-related deaths represents an important avenue to reduce stigma towards people who use drugs and in turn foster public support for evidence-based drug policies.

Introduction

Drug-related deaths are a significant public health concern in Australia and internationally (Reid et al., 2025; World Health Organization, 2024). National Australian data indicates an average increase of 4.1 % in drug-related deaths per year, with >30,000 drug-induced deaths recorded between 2003 and 2022 (Australian Institute of Health Welfare, 2025; Chrzanowska et al., 2024). Amphetamine-type stimulants account for a substantial portion of these deaths, having increased over sixfold since 2002 totalling >5000 deaths between 2002 and 2022 (Chrzanowska et al., 2023; Chrzanowska et al., 2024). The increase of amphetamine-type stimulant overdose deaths has also been observed internationally (Han et al., 2021; Vivolo-Kantor et al., 2020). However, these figures do not reflect the overall burden of harm stemming from long-term conditions and other health impacts related to drug use. When related factors such as intentional self-harm and drug-related health complications are accounted for, the number of deaths attributed to methamphetamine (a common amphetamine-type stimulant) over a

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similar period nearly doubles to >8000 deaths (Stronach et al., 2024). This highlights an urgent need for public health and policy interventions (Chrzanowska et al., 2024; Stronach et al., 2024).

Amphetamine-type stimulants refer to a group of amphetamine derived drugs including methamphetamine, amphetamine, 3,4-Methylenedioxymethamphetamine (MDMA) along with prescription drugs (e.g., Lisdexamphetamine). Of these, methamphetamine attracts a particularly high level of negative attention and stigma compared to other drugs (Deen et al., 2021; Francis et al., 2020). Stigma is defined as a mark of disgrace (Goffman, 2009) and is a social process whereby people are excluded, viewed negatively, or treated differently based on specific attributes, or identities, by the wider society resulting in a power differential that allows one group to devalue another (Link & Phelan, 2001). Since 2013, Australians have consistently rated methamphetamine/amphetamine as the 'drug of most serious concern' to the community (Australian Institute of Health & Welfare, 2024). The latest Australian National Drug Strategy Household survey found that 93 % of respondents disapproved of the regular use of methamphetamine/amphetamine. Disapproval has been posited as a potential driver of public stigma and its harmful consequences through the 'othering' of people who use drugs and undermining public health opportunities for harm reduction (Morris et al., 2024; Morris & Schomerus, 2023; Room, 2005).

In contrast, 3,4-Methylenedioxymethamphetamine (MDMA, commonly known as ecstasy) is viewed as a relatively benign drug; with only 2.1 % of Australians considering it a concern to the community (Australian Institute of Health & Welfare, 2024). Lower community concern in relation to MDMA may reflect higher social acceptability, likely shaped by several factors including association with younger and higher socioeconomic demographics which is mostly used in recreational settings (e.g., festivals) (Australian Institute of Health & Welfare, 2024; Degenhardt et al., 2005). A lower perception of harms may also influence community concern levels, for example there were 392 MDMA-related deaths in Australia (2001 to 2018; (Roxburgh & Lappin, 2020) compared to 4385 methamphetamine-related deaths (2001 to 2020; (Stronach et al., 2024). Lower levels of stigma associated with MDMA are likely due to the perception of those who use MDMA as having greater social, cultural, and economic capital, which can protect against drug use stigma, unlike people who use methamphetamine (Addison, 2023; Kennedy-Hendricks et al., 2016; Swalve et al., 2021).

Drawing on attribution theory (Weiner, 1995), drug use may be viewed as a personally controllable, self-initiated behaviour, leading people to perceive individuals as singularly responsible for their circumstances and more likely to be subjected to blame, anger, and stigma (Weiner, 1993; Weiner et al., 1988). Compared to other physical and mental health issues, people who use drugs are more likely to be defined by their behaviour, overlooking the significant role played by social and structural determinants of drug use such as trauma and socioeconomic status (Lancaster et al., 2017; Lin et al., 2024; Lloyd, 2013; Spooner & Hetherington, 2005; Ventura et al., 2022). However, not all drugs and people who use drugs are viewed in the same way or garner the same level and type of stigma.

Stigma associated with drugs is influenced by factors such as social acceptability, potential for harm, and route of administration (Palamar et al., 2012), as well as personal characteristics such as age, gender, race, and ethnicity (Dittrich & Schomerus, 2022; Douglass et al., 2023). People who are older (versus younger) people, males (compared to females) are considered more responsible for their drug use behaviours and subject to higher stigma (Goodyear et al., 2018; Sattler et al., 2017; Sattler et al., 2021), especially if they are seen as drawing on public resources, such as healthcare or emergency services (Broady et al., 2024). Research indicates that men and women who use drugs are differentially impacted by stigma and exhibit different patterns of help-seeking (Brener et al., 2024). For example, stigma may be higher for women who use drugs due to the 'double stigma' of identifying as a woman, and the accompanying societal expectations of women as wives, mothers, and carers which may be perceived as incongruent with drug use (Meyers et al., 2021). Other research suggests that men who use drugs are perceived as more anti-social, threatening, and dangerous, and thus less deserving of sympathy, compared to women who are seen as vulnerable in line with cultural views of victimhood and the 'ideal victim' (Sattler et al., 2017). The idea of the 'ideal victim' in reports of drug-related deaths has been described as young, middle class, white, and female (Christie, 1986; Johnston, 2020).

For people who use illicit drugs such as methamphetamine, stigma results in many negative consequences including poorer mental and physical health, reduced help-seeking behaviours, delayed treatment utilisation, and increased risk of overdose and death (Cumming et al., 2016; Kershaw et al., 2024). Engaging with health services (e.g., psychosocial interventions and harm reduction services) has been shown to mitigate methamphetamine related harms and reduce the risk of overdose and death (Dertadian & Tomsen, 2020; Luoma et al., 2012; Manning et al., 2017; McKetin et al., 2012; Tran et al., 2021). However, health service utilisation by people who use methamphetamine has been found to be consistently low across different types of treatment in Australia, with only 25 % to 54 % of those who require treatment for methamphetamine use, actually receiving treatment (Lanyon et al., 2019; McKetin et al., 2018; Ritter & O'Reilly, 2025). Importantly, it is estimated to take between 5 to 10 years for people to seek treatment after their first problematic use of methamphetamine (Brecht et al., 2013; Lee et al., 2012). Stigma is one of the most commonly reported barriers to help-seeking for people who use methamphetamine in Australia and internationally (Clifford et al., 2023; Cumming et al., 2016; Kershaw et al., 2024).

The stigma associated with methamphetamine is likely influenced and reinforced by sensationalist and inaccurate media representations of methamphetamine use and related deaths. (Habib et al., 2023; Lancaster et al., 2011; Whiteside & Dunn, 2022). Given only 1 % of Australians have self-reported methamphetamine use (Australian Institute of Health & Welfare, 2024), most Australians do not have direct contact with people who use methamphetamine. For many people, their level of familiarity with people who use methamphetamine may be primarily from news coverage and media representations. Therefore, the media acts as a powerful tool which shapes public perceptions and increases the salience of certain narratives (Hughes et al., 2010; Lancaster et al., 2011; McGinty et al., 2019). These narratives play an important role in justifying, maintaining, and further perpetuating stigmatising stereotypes (Lancaster et al., 2011; McGinty et al., 2019). Since the early 2000's, the Australian media have framed methamphetamine use as a population-wide problem or 'epidemic', employing the use of sensational headlines such as "deadly ice scourge", "ice-fuelled rampage" (Scheikowski, 2017) and "the icy grip of creeping death" which contribute to exaggerated and inaccurate perceptions of methamphetamine and its prevalence (Rawstorne et al., 2020; Usher et al., 2015). In contrast, a recent Australian media analysis found that festival-related drug deaths (primarily involving MDMA) are more frequently reported than other drug-deaths, and were often framed with a humanising lens which contextualised drug-use. These narratives focused on grief, "mistakes," and young lives "struck down" in their "prime,"; whereas other drug-deaths were framed with pity and shame, highlighting narratives of crime and trauma (Dertadian & Rance, 2023). This disparity reflects how media representations implicitly assign differential value to drug-deaths based on drug type and social context (Dertadian & Rance, 2023; Santamarina et al., 2024). In an evolving media landscape where articles that evoke fear and anger garner increased engagement and attention (Salomon et al., 2023), news media literacy (the skills related to critically analysing news media) is becoming increasingly important for individuals to interpret and assess content and combat misinformation (Austin et al., 2024; Barati et al., 2022; Dame Adjin-Tettey, 2022; Xiao et al., 2021).

Further, misinformation and stigmatising narratives that focus only on authoritarian and disciplinary approaches can divert attention,

public support, and resources away from evidence-based interventions and policymaking (Chalmers et al., 2016; Rawstorne et al., 2020). Some harm reduction initiatives (e.g., drug checking services and supervised drug-consumption facilities) have been shown to have strong efficacy in reducing individual and societal harms (e.g., overdose-related mortality), when implemented appropriately as part of broader public health policy. This includes links to treatment and recovery support infrastructure (Guise et al., 2023; Ritter & Cameron, 2006; Salmon et al., 2010; Wilson et al., 2015). Given that risk of overdose harms and deaths intersects with multiple forms of structural inequality, harm reduction initiatives may be particularly important in reaching marginalized and vulnerable populations who are less likely to access traditional treatment services (Hedrich & Hartnoll, 2021; Luchenski et al., 2018). Inaccurate and sensationalist media reporting about drug use and harm reduction has been linked to increased public stigma, negative societal attitudes, and weakened support for harm reduction policies (Carlon et al., 2025; McGinty et al., 2023; White et al., 2023).

The current study

A recent study (Sumnall et al., 2023) investigated the effects of news media representation of heroin-related deaths on stigma and support for harm reduction in the United Kingdom. It found that presentation of males compared to females, and older compared to younger characters were associated with higher levels of stigma towards the depicted individual. Higher stigma was also observed towards characters depicted in heroin-related deaths than in MDMA/ecstasy-related deaths. Additionally, the study found that participant characteristics such as higher belief in a 'just world', lower empathy, lower support for harm reduction policies, and lower exposure to media reports of families affected by drug-related deaths were predictive of higher stigma levels.

The present study aims to replicate and extend the original study in an Australian context. As a primary drug of concern in Australia that is also highly stigmatised and associated with increased rates of overdose, methamphetamine was selected as the drug of interest, with MDMA selected as a matched comparison due to its similar psychostimulant properties but association with less public stigma.

The secondary aim of this study was to conduct exploratory analyses to assess the relationship between participant characteristics, stigma, and support for harm reduction. Attribution theory was used to guide exploration into the individual characteristics and traits such as familiarity, empathy, and media literacy which may influence attributions of responsibility assigned to people who use drugs, stigma and support for harm reduction. (Bathje et al., 2019; Brener et al., 2010; Kulesza et al., 2015) Previous research has suggested an inverse relationship between stigma and level of personal experience and knowledge of a particular condition (Bathje et al., 2019; Patrick W Corrigan et al., 2001a). Lower levels of empathy have been associated with more stigmatising attitudes towards people with mental health disorders (Howell et al., 2014; Webb et al., 2016), although this relationship has yet to be explored specifically with stigma towards people who use drugs. Finally, previous research has indicated that news media literacy may influence substance use perceptions and behaviours, with greater news media literacy being linked to lower substance use and reduced impacts of health disinformation (Austin et al., 2024; Dame Adjin-Tettey, 2022; Seo & Austin, 2025). However, no previous study has explored the relationship between news media literacy, stigma, and support for harm reduction.

Specifically, this study aimed to investigate:

1) The effect of age, gender, and drug type depicted in simulated news stories about drug-related deaths on levels of stigmatising attitudes and support for harm reduction policies in Australia
2) The association between empathy, belief in a just world, familiarity with people who use drugs and news media literacy and levels of stigmatising attitudes and support for harm reduction policies

It was hypothesised that:

1) There would be higher stigmatising attitudes towards people in depictions of
   i) methamphetamine vs MDMA ('ecstasy') induced deaths,
   ii) males relative to females,
   iii) older relative to younger characters, and
2) Viewing these depicted characteristics would be associated with lower support for harm reduction policies
3) Lower levels of empathy, higher belief in a just world, lower familiarity with people who use drugs and lower levels of news media literacy would be associated with higher stigma and lower levels of support for harm reduction.

Methods

Design

This study replicates the design and methodology of Sumnall et al. (2023) with minor modifications to the demographic questions, stimuli, and exploratory measures to align with the Australian context. The drug types, photographs, visual elements, and place-specific language in the stimuli were changed to suit an Australian audience. In addition to the exploratory measures in the original study, the current study assessed support for legalisation, support for higher penalties, and news media literacy.

The study utilised a 2×2×2 (gender x age x drug type) factorial design with a nationally representative sample of the Australian population based on gender, age, and location, recruited via a Qualtrics panel (Qualtrics, 2020) from August to October 2024. Eligible participants consisted of people over the age of 18 and currently residing in Australia. In line with SAGER guidelines (Heidari et al., 2016), and as recommended by the Australian Bureau of Statistics Standards (2021c) for wider-population research, this study uses gender, rather than sex, to ensure accurate representation of a participants' identified gender at the time of the survey.

The Qualtrics research panel invited participants to take part in the online study via an email which provided general information about the study and a link which took them to a detailed participant information sheet. Informed consent was obtained before participants proceeded to the survey.

A target sample size of 1500 was calculated using G*Power (Faul et al., 2007), with the power analysis based on detecting a small effect size ($f = 0.25$; power 0.95) for a special effects and interactions MANOVA for the 2×2×2 factorial design.

This study was pre-registered on Open Science Framework (OSF) (https://osf.io/e29kn).

Materials

Stimuli

Participants were randomised to receive one of eight simulated online news stories. These stories were based on stories previously used (Sumnall et al., 2023) and an adapted online news report with a similar style to the publicly-funded Australian Broadcasting Corporation (ABC), Australia's most frequently accessed and trusted news platform (Newman et al., 2024), although no branding was used. The stories referenced the person's gender (woman vs. man), age (21 vs 42 years old), drug used (methamphetamine vs 'ecstasy') and frequency/duration of drug use ('once or twice' vs '15 years') which also reflected the person's age. The term 'ecstasy' was used in the news stories headline, with reference made to both MDMA and ecstasy made within story text to aid in comprehension for a general audience (Appendix 1). Substance use-related stigma impacts all people who use drugs, but is compounded for people from oppressed and marginalised racial or ethnicity groups.

To reduce confounding variables, images of people of Caucasian-appearing ethnicity, with neutral expressions against a plain white background were selected to accompany each news story matched to age and gender. Future dedicated co-design research is needed to adequately examine intersectional stigma. Images were sourced from the Chicago Face Database; an image database designed and normed for research purposes (Ma et al., 2015). The eight news stories are available in Appendix 1.

Measures

Demographic information

Demographic information (presented in Table 1) included age (in years), gender (ACON, 2025; Australian Bureau of Statistics, 2021c) residential postcode, region (metropolitan, regional, rural/remote), ethnicity (D'Almada-Remedios et al., 2021), highest level of education (Australian Qualifications Framework Council, 2013), household income (Office, 2024), employment status (Australian Bureau of Statistics, 2018), and political party preference (Australian Electoral Commission, 2025). Refer to Appendix 2 for full questionnaires.

Table 1
Descriptive statistics for demographic measures of the nationally representative sample (N=1490).

Age	N (%) M = 48.84 (SD 17.73)
Gender (N, %)	
Female	815 (54.7)
Male	659 (44.2)
Non-binary	12 (0.8)
Prefer not to answer	4 (0.3)
Geographical location	
Metropolitan	1041 (69.9)
Regional	362 (24.3)
Rural/Remote	87 (5.8)
Employment status	
Employed full time	587 (40.1)
Employed part time	315 (21.1)
Student	53 (3.6)
Carer	29 (1.9)
Unemployed	96 (6.4)
Not in the labour force (incl. retired, disability, home duties)	400 (26.8)
Household income	
$0 - $18,200	37 (2.5)
$18,201 - $45,000	255 (17.1)
$45,001 - $120,000	620 (41.6)
$120,001 - $180,000	299 (20.1)
$180,000+	206 (13.8)
Prefer not to answer	73 (4.9)
Highest level of education	
Year 11	53 (3.6)
Year 12 or equivalent	343 (23.0)
Certificate III/IV	277 (18.6)
Diploma/Advanced Diploma	187 (12.6)
Bachelor's degree	373 (25.0)
Graduate Diploma/Graduate Certificate	73 (4.9)
Postgraduate Degree	165 (11.1)
Other (incl. primary)	12 (0.8)
Prefer not to answer	7 (0.5)
Voting preference	
Australian Greens	216 (14.5)
Australian Labor Party	503 (33.8)
Central Alliance	2 (0.1)
Liberal Party	394 (26.4)
National Party	28 (1.9)
One Nation	81 (5.4)
Independent	29 (1.9)
Other (incl. Animal Justice, Legalise Cannabis)	13 (0.9)
No preference	188 (12.6)
Prefer not to answer	36 (2.4)

Note. M = mean; SD = standard deviation.

Primary outcomes

Attitudes

A nine-item measure (Sumnall et al., 2023) was used to assess levels of stigmatising attitudes towards the depicted person in the stories. The measure assessed different domains of stigma including blame, anger, pity, controllability (of the person's death), responsibility, and social distance. Items were scored on a nine-point Likert scale (1 "not at all" to 9 "very much") with a total score ranging from 9 to 91, with higher scores representing higher stigmatising attitudes towards the person (Cronbach's alpha (α) = .82).

Support for harm reduction

To assess support for harm reduction, participants were first presented with a short definition about harm reduction and then asked whether they had seen harm reduction mentioned in the media (Yes; No). Participants were asked to rate their support (1 "Strongly oppose" to 5 "Strongly support") for: 1) general harm reduction programmes; 2) government financial support for harm reduction; 3) provision of drug checking services; 4) establishment of drug consumption rooms; 5) provision of take-home naloxone; and 6) use of opioid agonist therapies in treatment. Scores were totalled, with higher scores representing greater support for harm reduction (α = .89). This measure was based on Wild et al. (2021) and adapted for an Australian context.

Secondary measures

Empathetic Perspective Taking

The empathic perspective-taking scale of the Interpersonal Reactivity Index (Davis, 1983) was included to assess participants' spontaneous propensity to take into account the perspectives of others. Participants rated 14 statements (e.g., '*Sometimes I don't feel very sorry for other people when they are having problems*') on a five-point Likert scale from 0 (does not describe me well) to 4 (describes me very well). Higher total scores indicated greater empathic perspective taking (α = .67).

Belief in a just world

The Global Belief in a Just World Scale (Lipkus, 1991) was used to assess participants' belief that the world is 'just'. Participants rate their agreement to 7 items (e.g., '*I feel that people get what they deserve*') on a Likert scale from 1 (strongly disagree) to 6 (strongly agree). Higher total scores indicated a greater belief in a just world (α = .89).

Level of familiarity with people who use drugs

A level of Familiarity (LOF) scale was adapted from Corrigan et al. (2001) to measure level of familiarity with people who have a substance use problem. The adapted version of the LOF consists of 11 items of varying levels of familiarity from no familiarity, ('*I have never observed a person that I was aware had a substance use problem*; LOF score = 1) to maximum familiarity, ('*I have a substance use problem*; LOF score = 11). Participants rated whether each statement was true or false for them and the item they endorsed which had the highest LOF score was their final score. This measure has demonstrated good interrater reliability and validity by previous studies (Patrick W Corrigan et al., 2001b; Patrick W. Corrigan et al., 2001a).

General stigma towards people who use drugs

General public stigma towards people with substance use problems was assessed using 4 items (Wild et al., 2021), for example: '*Would you be afraid to talk to someone who has a substance use problem?*'. Responses were scored on a five-point Likert scale (1 "definitely not" to 5 "definitely"; and prefer not to say, recoded as missing). Higher total scores indicated greater stigmatising attitudes towards people with substance use problems (α = .68).

News media literacy

News media literacy was assessed using an adaptation of the News media Literacy Scale (Ashley et al., 2013). Participants were asked to rate how much they agree (1 "Strongly disagree" to 5 "Strongly agree") to a subset of 6 items (e.g., '*Individuals can find news sources that reflect their own political value*') from the original scale[1] based on the selection from a previous study (Jones-Jang et al., 2021). Total scores were calculated as an average of scores across the 6 items and with higher scores indicating higher news literacy levels (α = .77)

Previous drug use

Participants were also asked about their own drug use and asked to select from a list of multi-choice options (alcohol, tobacco, marijuana, methamphetamine, cocaine, ecstasy, heroin, tranquilisers, pain killers, methadone, steroids, other). Both lifetime and previous 12-month use was collected, along with whether they had received treatment for their drug use.

Knowledge about drug use problems

Participants were also asked to self-rate their knowledge on a scale from 1 to 10 (10 = the highest level of knowledge) of reasons why some people develop problems with drugs.

Previous exposure to media coverage

Participants were also asked to indicate whether or not they had previously seen media coverage about a drug related death (Yes or No).

Support for legalisation and increased penalties

Utilising questions from the Australian National Drug Strategy Household Survey (Australian Institute of Health & Welfare, 2024), participants were asked how much they support the legalisation of individual drugs (marijuana/cannabis, heroin, methamphetamine, cocaine, ecstasy) as well as how much they support increasing penalties for the supply and purchase of these drugs.

Ethics

Ethics approval was obtained through the University of Sydney Human Research Ethics Committee (Approval no. 2024/HE000506). All participants gave informed consent.

Data analysis

All analyses were conducted in SPSS v28 (IBM Corp, Released 2021). Examination of the outcome variables suggested that total scores for stigma and support for harm reduction violated assumptions of normality (Shapiro-Wilk test: $p<.001$ for stigma; Shapiro-Wilk test: $p=.003$ for support for harm reduction). However, skewness was within the acceptable range for stigma (skewness = .077) and support for harm reduction (skewness = -0.72) (Byrne, 2013; Hair et al., 2019).This was supported by a visual inspection of histograms and Q-Q plots. Analyses were conducted on both non-transformed and log-transformed data and produced no differences in statistical testing. Thus, transformations were not applied to the data due to these reasons along with the large sample size and planned analyses (MANOVA and regression) which tend to be robust against non-normality (Stevens, 2002).

To assess the effect of story characteristics on participants levels of stigma towards the depicted person and support for harm reduction, a 2 (gender) x 2 (age) x 2 (drug) factorial MANOVA was conducted. Participant demographic factors were balanced across groups, so they were not included as covariates in the analyses. Four exploratory hierarchical linear regression analyses were undertaken to examine individual level correlates of stigma and support for harm reduction. In the first model, story factors (character age, gender, and drug) were included. Story factors were dummy coded with younger, female, and ecstasy as the respective references, and male, older, and methamphetamine dummy variables were created. In the second model, participant demographics (age, gender, highest level of education, household income) were added as additional variables of interest. Participant gender was dummy coded with male as the reference and female coded as 1. Participant highest level of education was dummy coded with Year 12 as the reference group based on the highest level of education attainment in Australia (Australian Bureau of Statistics, 2021a). Due to the small sample size of non-binary participants (n = 12), they were excluded from this exploratory analysis to ensure robust statistical power and avoid unreliable estimates. Participants who selected 'Prefer not to answer' to questions about their gender (n = 4), household income (n = 73), and highest level of education (n = 7) were treated as missing. In the third model, belief in a just world, empathic perspective-taking, and news media literacy were entered. In the final model, all variables of interest were entered including support for harm reduction (stigma analysis only), support for legalisation, support for increased penalties, knowledge about drugs, general stigma towards people with substance use problems, level of familiarity, and seeing a drug related death in the media. Participants who selected 'Don't know enough to say' to questions about support for legalisation (n = 80) or 'Prefer not to answer' to questions about general stigma towards people who use drugs (n = 22) to were treated as missing. We assessed for multicollinearity using variance inflation factors (VIFs). VIF values below 10 indicate no substantial multicollinearity (Hair et al., 1995). We also conducted bivariate models (correlations and t-tests) to determine any additional relationships that may have been accounted for by other variables in the multivariable models. Please refer to Appendix 4 for details.

The Qualtrics Research panel employed thorough data quality checks and cleaning (e.g., removing 'speeders' (completion time <5 min), reoccurring IP addresses, illogical or irrelevant responses) throughout the data collection. The research team (JD, GB, SK) also reviewed the data during collection at 50 % and 80 % of the targeted set sample size to monitor randomisation and attention checks. Only complete case data was provided by Qualtrics and used in the final analyses.

Statistical significance was set at α = .05.

Results

A nationally representative sample of 1490 participants completed the study. Mean age was 48.5 years (SD = 17.73) and 54.7 % identified as female (n = 815). The sample's distribution of age (18 years and above), gender, and state or territory of residence aligned closely with national population statistics (Australian Bureau of Statistics, 2021b). See Table 1 for complete demographics characteristics of the sample and Appendix 3 for sample demographics and descriptive statistics by condition.

Participant scores on secondary measures of participant characteristics and attitudes (e.g., the empathic perspective-taking scale, Global Belief in a Just World Scale) along with attitudes and knowledge around drugs and drug policies are presented in Table 2. Participant mean scores on empathetic perspective taking, belief in a just world, self-reported knowledge about substance use problems, general stigma towards people who use drugs, and level of familiarity were comparable to those on the same measures from the original study (Sumnall et al., 2023). On average, participants demonstrated high levels of news media literacy.

Participants' self-reported experiences of seeing harm reduction or a drug related death in the media as well as their own previous use of drugs are presented in Table 3.

[1] Based on the selection from Jones-Jang et al. (2021) taking 2 items from each of the 3 dimensions and avoiding items about technical knowledge.

Table 2
Descriptive statistics of participant scores on secondary measures including empathetic perspective taking, belief in a just world, and self-reported knowledge about substance use problems (N = 1490).

	Mean (SD)	Min-Max
Empathetic Perspective Taking Likert Scale (Davis, 1983)*	30.59 (6.53)	0 – 56
Belief in a Just World Likert Scale (Lipkus, 1991)*	22.62 (6.59)	7 – 42
Self-reported knowledge about substance use problems*	6.19 (2.09)	1 – 10
General stigma towards people who use drugs Likert Scale (Wild et al., 2021)*	11.87 (3.23)	4 – 20
Level of familiarity with people who use drugs* (Patrick W. Corrigan et al., 2001a)	6.52 (3.00)	0 – 11
Story stigma (Sumnall et al., 2023)*	43.87 (12.97)	9 - 81
Support for harm reduction*	25.51 (6.18)	7 – 35
Support for legalisation*	20.65 (4.00)	5 – 30
Support for increased penalties*	18.71 (5.94)	5 – 30
News media literacy (Ashley et al., 2013)*	4.04 (0.52)	1 – 5

* Higher scores indicated empathic perspective, greater belief in a just world, self-reported knowledge about substance use problems, general stigma towards people who use drugs, familiarity with people who use drugs, stigma towards story characters, support for harm reduction, support for legalisation, support for increased penalties, and news media literacy, respectively.

Table 3
Descriptive statistics of participants' self-reported previous experience of harm reduction and drug related deaths in the media and their use of drugs across their lifetime (N = 1490).

	N	%
Seen harm reduction in media	743	49.9
Seen drug related death in media	617	41.4
Lifetime use of drugs		
Alcohol	1281	86.0
Tobacco	780	52.3
Marijuana/Cannabis	571	38.3
Methamphetamine	154	10.3
Cocaine	193	13.0
Ecstasy	219	14.7
Heroin	42	2.8
Tranquilisers/Sleeping pills	250	16.8
Pain-killers/opioids	643	43.2
Methadone/Buprenorphine	30	2.0
Steroids	79	5.3
Never used any of the above	132	8.9
Other	16	1.1

Main analyses

There were significant differences in ratings of stigma depending on the age of story characters (Wilks' $\Lambda = .95$; $F_{2,1466} = 40.71$, $p < .001$), and drug type (Wilks' $\Lambda = .98$; $F_{2,1466} = 13.52$, $p < .001$), but not gender of story characters (Wilks' $\Lambda = 1.00$; $F_{2,1466} = 2.33$, $p = .104$). However, the interaction effects for gender x age (Wilks' $\Lambda = 1.00$; $F_{2,1466} = .16$, $p = .851$), gender x drug (Wilks' $\Lambda = 1.00$; $F_{2,1466} = 1.60$, $p = .202$), and age x drug (Wilks' $\Lambda = 1.00$; $F_{2,1466} = 0.21$, $p = .813$) were not statistically significant.

Specifically, ratings of stigma were found to be higher towards representations of older vs younger characters ($F_{1,1467} = 43.03$, $p < .001$; 46.1 ± 12.6 vs 41.8 ± 12.9); and methamphetamine vs MDMA/ecstasy deaths ($F_{1,1467} = 25.87$, $p < .001$; 45.6 ± 12.8 vs 42.2 ± 12.9).

For support for harm reduction, no significant differences were found between the depiction of age, gender, or drug type in the stories. (gender $F_{1,1467} = .76$, $p = .384$, 25.4 ± 5.1 vs 25.5 ± 4.8; age $F_{1,1467} = 3.16$, $p = .076$, 25.0 ± 4.8 vs 23.2 ± 25.8; drug $F_{1,1467} = 3.15$, $p = .076$, 25.7 ± 4.8 vs 25.2 ± 5.08). There were also no statistically significant interaction effects between gender, age and drug on harm reduction support.

Exploratory analyses

Multicollinearity was not a major concern in the models (VIFs<5) and all correlations for continuous covariates indicated low to moderate associations (<0.6).

For categorical covariates, t-tests revealed significant higher stigma towards the depicted character among male participants compared to female participants. This association was no longer significant when participant attitudes were added as covariates. T-tests also found significantly higher support for harm reduction for participants who recalled seeing a drug related death in the media compared to participants who did not. This association was no longer significant when recall of drug death in the media was added in the final step of the regression model along with other participant attitudes.

Stigma

The regression models investigating correlates of stigma towards the depicted characters are presented in Table 4. The final model was statistically significant, accounting for approximately 47 % of variance in stigma towards the depicted character ($R^2 = .47$; $F_{22,1287} = 51.32$; $p < .001$). In step 1 (inclusion of story conditions only), representation of older character age and methamphetamine deaths were significantly associated with higher stigma scores, and remained significant across all models. Compared to younger characters, older characters on average scored 4.59 higher in stigma ($B = 4.59$, $SE\,B = .54$, $p < .001$), controlling for other variables in the final model. Compared to MDMA/ecstasy, methamphetamine scored 2.93 points higher in stigma on average ($B = 2.93$, $SE\,B = .54$, $p < .001$), controlling for other variables in the final model. Compared to female characters, male characters scored 1.64 points higher in stigma on average ($B = 1.64$, $SE\,B = .54$, $p = .002$), controlling for other variables in the final model.

In the final model, which accounted for all measured correlates of stigma, greater belief in a just world, lower empathetic perspective taking, lower support for harm reduction, higher general stigma towards people with substance use problems, lower support for legalisation, and higher support for increased penalties associated with purchase and supply were additionally uniquely associated with higher stigma scores.

Support for harm reduction

The regression models investigating the correlates of support for harm reduction are presented in Table 5. The final model was statistically significant, accounting for approximately 28 % of variance in support for harm reduction policies ($R^2 = .28$; $F_{21,1288} = 23.76$.; $p < .001$). Story factors were not significantly associated with support for harm reduction in any step of the modelling. When all measured correlates were included in the model, younger participant age, having a highest level of education as post graduate or primary, lower belief in a just world, greater empathic perspective taking, higher news media literacy, lower stigmatising attitudes towards drug use, higher support for legalisation, and lower support for increased penalties associated with purchase and supply, were uniquely associated with greater support for harm reduction.

Discussion

This study investigated how representations of methamphetamine-related deaths in simulated media reports are related to stigma towards the depicted character, and support for harm reduction. Building upon earlier work (Sumnall et al., 2023), this nationally representative study is the first of its kind in Australia to gather data on public attitudes towards methamphetamine-related deaths and related drug policies in the context of media reporting. This study also examined the

Table 4
Summary of hierarchical regression models for variables predicting stigma towards characters depicted in the eight simulated news stories (N = 1310[1]).

	Model 1			Model 2			Model 3			Model 4		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Story Gender (Female[2] vs Male)	1.14	.71	.04	1.15	.70	.04	1.07	.66	.04	1.64	.54	.06**
Story Age (Young[2] vs Old)	4.42	.71	.17***	4.81	.70	.17***	4.82	.66	.19***	4.59	.54	.18***
Story Drug (Ecstasy[2] vs Meth)	3.62	.71	.14***	3.73	.70	.14***	3.44	.66	.13***	2.93	.54	.11***
Participant Gender (Females[2] vs Males)				1.73	.72	.07*	-.28	.70	-.01	.70	.57	.03
Participant Age				.10	.02	.14***	.10	.02	.13***	.04	.02	.05
Participant Education (Year 11 and below)				-2.85	1.81	-.05	-3.11	1.71	-.05	-1.29	1.38	-.02
Participant Education (Cert III/IV)				-.83	1.08	-.03	-.84	1.02	-.03	.15	.83	.01
Participant Education (Adv/Diploma)				-1.65	1.22	-.04	-.94	1.16	-.02	-1.56	.94	-.04
Participant Education (Bachelor Degree)				-.06	1.03	-.00	.42	.98	.01	.49	.80	.02
Participant Education (Grad Diploma/Cert)				-2.13	1.75	-.04	-.73	1.65	-.01	-1.32	1.34	-.02
Participant Education (Postgrad degree)				.27	1.30	.01	.87	1.22	.02	.78	1.00	.02
Participant Household Income				.37	.37	.03	.25	.35	.02	.23	.29	.02
Belief in a Just World							.62	.05	.31***	.24	.05	.12***
Empathetic Perspective Taking							-.22	.05	-.11***	-.09	.04	-.05*
News Media Literacy							-1.62	.67	-.06*	.35	.56	.01
Support for Harm Reduction										-.72	.05	-.35***
Stigma towards PWUD										1.19	.09	.29***
Level of Familiarity										-.00	.11	.00
Support for Legalisation										-.35	.08	-.11***
Support for Increased Penalties										.12	.05	.05*
Drug Knowledge										-.00	.15	.00
Seen DRD in the Media (Yes* or No)										-.26	.56	-.01

[1] N= 1310 due to exclusion of participants who selected "prefer not answer" to questions regarding gender, cultural background, education level, and/or household income.
[2] Reference group.
*$p < .05$ **$p < .01$ ***$p < .001$.
Note. B = unstandardised beta, *SE B* = Standard Error for unstandardized beta, β = standardised beta.

Table 5
Summary of Hierarchical Regression Models for Variables Predicting Support for Harm Reduction (N = 1310[1]).

	Model 1			Model 2			Model 3			Model 4		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*	*B*	*SE B*	*β*
Story Gender (Female[2] vs Male)	.21	.35	.02	.29	.34	.02	.36	.33	.03	.32	.30	.03
Story Age (Young[2] vs Old)	.68	.35	.05	.42	.35	.03	.37	.33	.03	.43	.30	.03
Story Drug (Ecstasy[2] vs Meth)	-.57	.35	-.05	-.52	.35	-.04	-.40	.33	-.03	-.24	.30	-.02
Participant Gender (Females[2] vs Males)				-.20	.36	-.02	.56	.35	.04	.12	.32	.01
Participant Age				-.05	.01	-.15***	-.06	.01	-.16***	-.03	.01	-.08**
Participant Education (Year11 and below)				-.70	.89	-.02	.94	.84	.03	.33	.78	.01
Participant Education (Certificate III/IV)				.43	.53	.03	.47	.50	.03	.21	.46	.01
Participant Education (Adv/Diploma)				-.38	.60	-.02	-.55	.57	-.03	-.48	.53	-.03
Participant Education (Grad Diploma/Cert)				.09	.86	.00	-.64	.82	-.02	-.46	.75	-.02
Participant Education (Postgrad degree)				1.56	.64	.08*	1.06	.60	.05	1.33	.56	.07*
Participant Household Income				-.05	.18	-.01	-.06	.17	-.01	-.00	.16	-.00
Belief in a Just World							-.21	.03	-.22***	-.11	.03	-.11***
Empathetic Perspective Taking							.14	.03	.14***	.12	.02	.13***
News Media Literacy							2.16	.33	.18***	1.93	.31	.16***
Stigma towards PWUD										-.27	.05	-.14***
Level of Familiarity										.05	.06	.02
Support for Legalisation										.41	.04	.27***
Support for Increased Penalties										.-.10	.03	-.09***
Drug Knowledge										.09	.08	.03
Seen DRD in the Media										-.20	.31	-.01

[1] N= 1310 due to exclusion of participants who selected "prefer not answer" to questions regarding gender, cultural background, education level, and/or household income.
[2] Reference group.
*$p < .05$ **$p < .01$ ***$p < .001$.
Note. B = unstandardised beta, *SE B* = Standard Error for unstandardized beta, β = standardised beta.

relationship between individual characteristics, traits, beliefs, and stigma towards people who use drugs and support for drug policies.

As hypothesised, the study found higher stigma levels towards the depiction of a methamphetamine-related death compared to an MDMA-related death. This is unsurprising given the high levels of public disapproval towards methamphetamine in Australia, as reported in the National Drug Strategy Household Survey and previous research (Australian Institute of Health & Welfare, 2024; Deen et al., 2021). Negative biases against people who use methamphetamine are pervasive, both implicitly and explicitly, often reinforced by stereotypes evoking fear and apprehension (Makki et al., 2024). Such biases persist even among sensitive and highly-trained health professionals in Australia with some describing people who use methamphetamine as "erratic", "aggressive", "unpredictable", and "chaotic" (Pennay & Lee, 2009). Although this may reflect the high-risk encounters (e.g., acute intoxication) and inadequate structural support healthcare workers

experience when presented with drug-related issues (Cazalis et al., 2023). However, similar perceptions are prevalent throughout the general population. For example, in a United States study, participants described a 'typical' person who uses methamphetamine with reference to negative aspects of physical appearance such as "dirty", and "disgusting" in contrast to a 'typical' person who uses hallucinogens which elicited more positive associations of someone who was "thrill--seeking", "chill", and "fun" (Swalve et al., 2021). Previous Australian research has also found growing support for a less punitive approach towards cannabis, MDMA, and cocaine, but not methamphetamine or heroin (Weatherburn et al., 2022). While factors such as route of administration and differing behavioural and physiological effects across drug types are likely to influence support (Kirkpatrick et al., 2012), attribution theory suggests that the hierarchy of stigma may also be explained by negative attributions and public perceptions, often reinforced and reflected by media reporting of methamphetamine through a criminal justice framing that emphasises individual responsibility, dangerousness, and culpability (Cohn et al., 2020; Lancaster et al., 2014; Sunderland et al., 2023). In contrast, recent media framing of MDMA highlight it's potential medicinal benefits (e.g., in treating post-traumatic stress disorder; (Palamar & Le, 2022)), and sympathetic narratives which frame MDMA as a "party drug," diverting implications of criminality or responsibility to the drug supplier, rather than the individual using the drug (Dertadian & Rance, 2023). Given this framing reinforces the perception that people who use methamphetamine are morally deviant or dangerous rather than as people in need of support or care (Garland, 2001), it is unsurprising that representations of methamphetamine-related death elicited higher levels of stigma compared to MDMA (the control drug condition) in this study.

Also in line with the study's hypotheses, higher ratings of stigma were found towards depictions of older people compared to younger people. It is not uncommon for older adults to face stigma and discrimination due to their age when accessing healthcare and support for multiple health conditions, including mental health difficulties and the use of drugs including methamphetamine, opioids, and cannabis (Conner & Rosen, 2008; Dahlke et al., 2024). Drug use in older persons may be underestimated and overlooked by health services, policy-makers, as well as the individuals themselves. In line with attribution theory this may be due to perceived controllability and responsibility of older adults for their behaviours, misconceptions about what is "normal" in the aging process (e.g., thinking that depression is part of getting older but that people should 'age out' of drug use) (Liahaugen Flensburg et al., 2025), or signs of substance use disorders being potentially masked by symptoms of other mental and physical health conditions (Choi et al., 2014; Conner & Rosen, 2008; Depla et al., 2005). This is of particular concern considering patterns of recent methamphetamine use are comparable in older (age 40–49) and younger (age 20–29) adults (both 1.7 %), a pattern which contrasts with typical age-related trends observed for other drugs. For example, recent use of MDMA is much higher in younger adults (7.5 %) compared to older adults (1.1 %) (Australian Institute of Health and Welfare, 2024). Older people also tend to have high levels of physical and mental health comorbidities, which introduces complexity into both assessment and treatment of health conditions (Lintzeris et al., 2016). It is important for future research to explore and address stigma towards older persons who use drugs, recognising their unique risks and strengths and how these may impact drug harms, access to and experience of health services among older persons.

Contrary to the hypothesis that male compared to female characters would be associated with higher stigma and lower support for harm reduction, there was no significant difference between male and female characters. This differs to previous research (Sumnall et al., 2023) which found that depictions of older males elicited higher stigma scores compared to younger females. The present findings may reflect the complexities and nuances involved in measuring and understanding gender-related drug stigma. Some studies have found that women who use drugs may be subject to elevated stigma due to societal expectations (Clifford et al., 2023; Meyers et al., 2021; Sorsdahl et al., 2012). However, other studies suggest men are more likely to be subject to stigma as they are perceived as more threatening and aggressive under the influence of drugs (Sattler et al., 2017). This may be pronounced for drugs like methamphetamine that are associated with stereotypes of aggression, psychosis, and dangerousness (Deen et al., 2021) compared to drugs like MDMA which are associated with more socially acceptable "happy highs". The findings of the current study support growing evidence that gender of the person using drugs alone may not be a strong predictor of stigma towards people who use drugs. Rather, stigma related to gender and drug use likely interacts with many other factors including age, socio-economic and cultural background, as well as precipitating and contextual factors, such as the duration of drug use and how they obtained the drug (Goodyear et al., 2018; Meyers et al., 2021). Further, the prevailing negative stereotypes and associations of people who use methamphetamine as dangerous or violent may drive fear and stigma regardless of the individual's gender (Makki et al., 2024). There is a need for future research that captures the intersectional and compounding nature of gender and drug use stigmas and subsequent effects on access to care (Turan et al., 2025).

There were no significant findings regarding support for harm reduction. Previous research suggests that attitudes towards drug policy reform such as harm reduction approaches are often rooted in individuals' moral positions which have been found to be relatively stable and unmoved by factual media messaging about harm reduction measures (Stevens, 2019; Sumnall et al., 2020). The stability of these internally held views may be one explanation for the absence of differences found between story characteristics (gender, age or drug) and support for harm reduction in this study. Another explanation may be the relatively low media coverage on harm reduction in Australia which may contribute to misconceptions about what harm reduction involves (Hughes et al., 2010; Whiteside & Dunn, 2023).

Exploratory analyses found that younger participant age, greater empathy, and lower stigma were uniquely associated with greater support for harm reduction after other participant demographic and personality factors had been accounted for. Whilst personality factors and values are difficult to shift, the inverse relationship between stigma and support for harm reduction positions stigma reduction as a potentially impactful target for increasing public support for harm reduction measures (Kulesza et al., 2015). These findings add to the growing literature on the complex values-based debate surrounding harm reduction and drug policy reform. Exploratory analyses also found that participant characteristics and personality factors were associated with stigma towards depicted characters. As predicted, greater belief in a just world, lower empathetic perspective taking, lower support for harm reduction, higher general stigma towards people with substance use problems, lower support for legalisation, and high support for increased penalties were associated with higher stigma ratings. Knowledge about drugs and level of familiarity were not associated with stigma or support for harm reduction which diverges from the theory that the more familiar someone is with a condition, the less negative attitudes they will have towards those with the condition (Bathje et al., 2019; Patrick W Corrigan et al., 2001b). This may reflect an inverted-U relationship between familiarity and drug use whereby high levels of familiarity (e.g., people with an intimate partner who uses drugs or healthcare workers) may involve heightened psychosocial burden or greater exposure to negative experiences for the individual which may introduce negative feelings and stigma (Corrigan & Nieweglowski, 2019). Further, it is worth noting the modal LOF in the study was "I have watched a movie or TV show in which a character depicted a person who uses drugs" suggesting relatively low familiarity which may have attenuated associations. Other research has suggested that it is important to consider the nature of familiarity rather than the relationship alone; for example, one's knowledge about drug use, its causes, and consequences as well as the attached stigma and how they have been personally impacted (Corrigan

et al., 2003; Sattler et al., 2021). Finally, as predicted, greater empathic perspective taking, lower stigmatising attitudes towards drug use, high support for legalisation, and lower support for increased penalties were positively associated with support for harm reduction.

Interestingly, news media literacy was positively associated with support for harm reduction but was not associated with stigma. This supports previous findings that higher news media literacy is associated with greater scientific literacy, as well as lower substance use (Austin et al., 2024; Seo & Austin, 2025). The ubiquity of digital and social media technologies, particularly among young people, present unique challenges and opportunities for utilising media literacy skills to buffer against the effects of misinformation on behaviours and attitudes related to substance use (Austin et al., 2024; Barati et al., 2022; Xie et al., 2019). Given the prioritisation of audience attention, digital media platforms including news outlets are incentivised to drive engagement through triggering fear, anger, and outrage, which in turn may amplify stigmatising narratives and misinformation (Lancaster et al., 2011; Salomon et al., 2023). Media literacy education and interventions aimed at improving critical thinking skills may help people effectively discern evidence-based content from biased, sensationalised, and emotionally charged reporting, promoting more compassionate and informed attitudes towards substance use and harm reduction approaches (Austin & Pinkleton, 2016; Swire-Thompson & Lazer, 2020). More research is needed to evaluate media literacy and its potential role in mitigating misinformation and stigma around substance use in the media.

In support for harm reduction, no significant differences were found between the depiction of age, gender, or drug type. In contrast, Sumnall et al. (2023) found that depictions of older characters were associated with greater support for harm reduction. The differences between the original study and the present study provide valuable insights into which characteristics are most susceptible to stigma in media reporting of drug-related deaths within the Australian media landscape specifically. Several contextual factors may account for the differences observed, such as the fact that Australia has implemented a number of harm reduction strategies such as supervised drug consumption and injection facilities which, despite facing ongoing challenges to implementation, have been met with generally positive public and local business support (Ryan, 2023; Salmon et al., 2007). Indeed, between 2019 and 2022–23, support for almost all harm reduction measures in Australia increased, with the greatest increase in support towards drugs/pills testing at designated sites and supervised drug consumption rooms (Australian Institute of Health & Welfare, 2024).

Strengths and limitations

This study had a number of strengths. Firstly, the study included a large, nationally representative sample of Australians, allowing for a relatively representative cross-sectional snapshot of beliefs and attitudes towards people who use drugs and drug policies. Secondly, as a replication of the original study conducted in a different cultural context (Sumnall et al., 2023), the study featured a robust design. This includes the use of comprehensive questionnaires which assessed a wide range of topics, as well as statistical methods which allowed for both hypothesis driven and in-depth exploratory analysis into a range of factors associated with stigma and support for harm reduction. Finally, this study is the first of its kind in Australia to explore the effect of different stigmatised characteristics in drug-related deaths in the media. Against the cultural and social context of Australia's reporting of methamphetamine, this study adds to the pressing need for shifts in policies around media reporting of drug-related deaths to address public stigma and barriers to implementation of harm reduction strategies.

The results should be considered within the limitations of the study. Firstly, the current study did not include representations of other stigmatised identities, such as ethnicity and culture, diverse genders (including non-binary and transgender people), and other marginalised communities, in the news stories depicting drug-related deaths. Substance use-related stigma impacts all people who use drugs, but can be further compounded for people from oppressed and marginalised racial or ethnicity groups (Dittrich & Schomerus, 2022; Douglass et al., 2023). As in Sumnall et al. (2023) original study, the decision to use only Caucasian-appearing people in the stories was made due to the acknowledgement that an examination of race and ethnicity in drug use stigma requires dedicated co-designed methodology to adequately examine this topic and to control for compounded intersectional stigma. Of particular importance in the Australian context, is the need to better understand the intersectional drug-related stigma for Aboriginal and Torres Strait Islander peoples. Intersectional stigma can be understood as both a complex cause and effect of methamphetamine use, involving the overlapping stigmas of illicit drug use and historical and ongoing marginalisation and systemic disadvantage (Gendera et al., 2022; MacLean et al., 2017; Sivak et al., 2023). It is estimated that Aboriginal and Torres Strait Islander peoples are 2.3 times more likely to have used methamphetamine in the past 12 months when compared to non-Indigenous Australians (Australian Institute of Health & Welfare, 2024) and methamphetamine-related harms for Aboriginal and Torres Strait Islander peoples are influenced by historical factors, such as colonisation and systemic disempowerment, as well as social determinants like housing, education, and employment (Snijder & Kershaw, 2019). Currently, there is a lack of research that considers the perspective of people from minority and marginalised communities and the multifaceted layers of stigmatised identities that likely exist for these populations (Turan et al., 2025). Understanding the interplay between drug use, racism, and broader social determinants is an important direction for future research in this area.

The cross-sectional nature of these data also mean that the significant associations identified in the regression analyses cannot be presumed to be causal. Although the study employed nationally representative recruitment quotas to match age, gender, and location with the adult Australian population, and provides reductions in sampling bias relative to convenience samples, panel studies may still be less reliable than household level sampling due to low representativeness of hard-to-reach populations and/or minority populations that are less represented on the online panel or those with restricted access to online assessment.

Further, the stories referenced the length of drug use ('once or twice' or '15 years' in order to reflect the subject's age. It is plausible that the length of drug use may influence stigma or support for harm reduction in and of itself. Future research would benefit from investigating both age and length of drug use as potentially distinct characteristics. Finally, the external validity of the present study is limited to the Australian context due to the high variation in socioeconomic factors and political nature of drug attitudes and policies in different locations. Despite these limitations, this study's findings have important implications for both future research and media and policy decision-making.

Implications and future directions

The findings of the present study build upon existing literature on the links between media, stigma, and drug-related deaths and have important implications for the development and implementation of initiatives targeting methamphetamine-related stigma and broader drug policy reform. The key finding that stigma towards news stories featuring methamphetamine-related deaths was higher compared to MDMA-related deaths highlights the need for reporting of methamphetamine use and methamphetamine-related deaths to be non-stigmatising. This can be achieved through the use of person-centred language, multiple credible external sources, and shifting from a criminal lens to a health perspective (Sunderland et al., 2023). The language used in the reporting of drug use and related deaths plays a key role in influencing public attitudes which in turn drives drug policy and healthcare reform including harm reduction measures, resulting in tangible and wide-reaching impacts on individuals' ability to access equitable healthcare and treatment (Cohn et al., 2020; Rawstorne et al., 2020). For

example, the 2015 mass-media campaign 'Ice Destroys Lives', reinforced stigmatising portrayals of people who use methamphetamine as dangerous and violent (Douglass et al., 2017) and people who had used methamphetamine reported that the campaign misrepresented their experiences and discouraged help-seeking, highlighting the potential adverse implications of media representations of drug use that are not evidence-based or informed by lived experience (Allara et al., 2015; Cohn et al., 2020; Douglass et al., 2017).

While evidence-based guidelines for reporting substance use have been developed (Everymind, 2019) there are currently no evidence-based guidelines for media reporting of drug-related deaths, leaving the news media landscape at risk for perpetuating bias and inaccuracies in the portrayal of methamphetamine use. Guidelines for reporting drug-related deaths that promote humanising language and narratives and acknowledge the societal and structural inequalities that commonly precipitate drug use rather than individual blame, have the potential to address public stigma and increase public support for evidence-based drug policy reform, including harm reduction policies (Cheetham et al., 2022; McGinty et al., 2018; Scher et al., 2023; Schutz & Smout, 2024). Importantly, future research and policy-making should privilege the voices and perspectives of people with lived and living experience of methamphetamine use. Future research, policy and guidelines on drug-deaths, media reporting, and harm reduction should be co-designed with people who will be most impacted (Claborn et al., 2022; Israel et al., 2001).

Conclusion

This study is the first in Australia to examine the relationships between methamphetamine-related deaths, media reporting, and stigma and support for harm reduction. The findings extend previous research on the need to address and reduce methamphetamine-related stigma and improve media reporting of methamphetamine related deaths. This is important not only to reduce the impacts of stigma on individuals but also to foster public support for harm reduction and drug reform policies that in turn contribute to reduced methamphetamine-related harms and deaths. A concerted effort between community, the media, and policy-makers is critical for the systemic and structural change needed to reverse the trend of increasing methamphetamine-related harms and deaths and address barriers to accessible, equitable, and empathic healthcare for people who use drugs.

CRediT authorship contribution statement

Steph Kershaw: Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Jessica Deng:** Writing – original draft, Investigation, Formal analysis, Data curation. **Georgette Borel:** Writing – original draft, Investigation, Formal analysis, Data curation. **Siobhan O'Dean:** Writing – review & editing, Conceptualization. **Jack Wilson:** Writing – review & editing, Conceptualization. **Louise Birrell:** Writing – review & editing, Conceptualization. **Katrina Prior:** Writing – review & editing, Conceptualization. **Marlee Bower:** Writing – review & editing, Conceptualization. **Amelia Henry:** Writing – review & editing, Conceptualization. **Emma K. Devine:** Writing – review & editing, Conceptualization. **Matthew Sunderland:** Writing – review & editing, Methodology, Conceptualization. **Harry Sumnall:** Writing – review & editing, Methodology, Conceptualization. **Cath Chapman:** Writing – review & editing, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Louise Birrell reports financial support was provided by Australian National Health and Medical Research Council. Cath Chapman reports financial support was provided by Australian National Health and Medical Research Council. Cath Chapman reports administrative support was provided by Centre of Research Excellence in the Prevention of Mental Illness and Substance Use. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data Statement

The data that support the findings of this study are available from the corresponding author, SK, upon reasonable request.

Supplementary materials

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