



Paranoia and maladaptive behaviours in homelessness: The mediating role of emotion regulation

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Objectives. Current research has implicated a role for cognitive and emotional processes in the pathways to becoming homeless. Evidence implicates three risk factors, which are often associated with an increased incidence of homelessness: paranoid thinking, emotion regulation, and engaging in maladaptive behaviours. Maladaptive behaviours include deliberate self-harm, substance misuse, and high-risk sexual practices. Currently, no studies have investigated the specific psychological mechanisms, such as difficulty regulating emotions, which underpin the association between paranoia and maladaptive behaviours.

Design. A mediational design was employed in a group of homeless individuals. Method: Participants ($N = 40$), who were homeless at the time of the study, completed a single-session assessment of paranoia, emotion regulation, and maladaptive behaviours.

Results. Mediation analyses indicated that individuals scoring high on paranoia were more likely to engage in maladaptive behaviours, particularly substance misuse and aggression, when they had difficulty regulating their emotions. These results demonstrate a novel finding relating to the effect of emotion regulation in maintaining psychopathology and behaviours in vulnerable individuals, which may in turn sustain periods of homelessness.

Conclusions. Emotion regulation may therefore be one particular psychological mechanism through which severe mental illness affects engagement in self-destructive behaviours in homelessness. These findings have valuable clinical implications for targeted therapeutic interventions, in this often difficult to treat homeless population.

Practitioner points

- Psychosis is over-represented in the homeless population; the cycle of homelessness may be attenuated by addressing psychotic symptomology.
- Homeless individuals engage in drug abuse, self-harm, aggression, and high-risk sexual practices due to an inability to regulate distressing emotions effectively.
- Therapeutic interventions, such as MBT and DBT, which target emotion regulation difficulties, may be useful in reducing maladaptive behaviours and preventing homelessness, by providing emotion regulation strategies to cope when homeless persons become distressed.

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Homelessness is a pertinent and emotionally evocative societal concern, incorporating a number of adverse psychological outcomes that have become increasingly relevant to urban and rural communities across the United Kingdom (Rees, 2009). Official statistics estimate that 4,134 people were sleeping rough in England on any one night in autumn 2016, which is up 16% from 2015 (DCLG, 2017). There are many heterogeneous pathways to becoming homeless, typically resulting from an interaction between macrocosmic factors, such as poverty and unemployment, and microcosmic factors, including childhood trauma, mental illness, and substance misuse (Fitzpatrick, Kemp, & Klinker, 2000). The challenges faced by homeless persons are therefore numerable, often leading to marginalization, financial insecurity, and exposure to high-risk environments (Heerde, Hemphill, & Scholes-balog, 2014). Exposure to these elements may exacerbate risk factors such as mental illness, which may consequently initiate engagement in maladaptive coping behaviours that maintain homelessness. As a result, homelessness has a number of grave consequences, including increased mortality, suicide, substance abuse, and susceptibility to psychiatric disorders, particularly psychosis (Warnes, Crane, Whitehead, & Fu, 2003). Given the complex nature of the precipitating conditions that may exacerbate behaviours that lead to homelessness, research isolating such factors may be useful to compliment multifactorial methods.

Psychosis is over-represented in the homeless population, with prevalence figures ranging from 2.8 to 42.3% (Fazel, Khosla, Doll, & Geddes, 2008), whereby roofless individuals are the most at risk. The European Schizophrenia Cohort recognizes homelessness to be an adverse outcome of psychosis, with 32.8% of UK participants with schizophrenia experiencing homelessness in their lifetime (Bebbington *et al.*, 2005). In such instances, psychosis may precede homelessness due to an increase in symptom severity, a redundancy, or the loss of a carer (Warnes *et al.*, 2003).

Psychotic disorders may similarly coexist with difficulties in implementing essential coping strategies that may otherwise prevent entry into the homeless cycle. In particular, certain cognitive factors including paranoid and disorganized thinking, poor problem solving, and depressive symptoms may prevent the deployment of resilience-promoting mechanisms and thereby contribute to the development of homelessness. This study aimed to explore the prominent cognitive factors involved in maintaining homelessness by examining one specific cognitive distortion observed in psychosis: paranoid thinking. Research conducted by Berner (1997) suggests that this symptom-oriented approach – examining single symptoms of psychosis – may serve to inform our knowledge of severe mental illness. In this study, a single-symptom approach permitted an in-depth investigation of paranoid beliefs, which would not have been possible should the focus included broader dimensions of psychosis, such as hallucinations.

Paranoid thinking

In this study, we define paranoia as the unfounded belief that one is being intentionally harmed by a persecutor; persecutory delusions may be excessive, distressing, and held with great conviction (Freeman & Garety, 2000; Freeman *et al.*, 2005). Emerging evidence supports a continuous paranoia spectrum ranging from mild ideas of social reference to clinically relevant persecutory delusions (Combs, Michael & Penn, 2006; Freeman *et al.*, 2005; Verdoux & van Os, 2002). Further, cognitive and emotional disturbances frequently seen in persecutory delusions can also be observed in subclinical samples (Fowler *et al.*, 2006; van Os, 2003; Freeman

et al., 2005). Studying the psychological processes underpinning paranoia in subclinical populations is therefore a valuable way of informing our understanding of clinically relevant delusions (Freeman *et al.*, 2005; Johns & van Os, 2001; Westermann & Lincoln, 2011). Paranoid beliefs may exacerbate the risk of homelessness due to a pervasive mistrust for institutions as well as the denial of symptoms and the need for treatment. In severe cases, individuals who develop persecutory beliefs about their neighbours may eventually abandon their property (Warnes *et al.*, 2003). The experience of paranoid thinking may reduce the ability to cope with the daily stressors of being homeless, preventing the acceptance of help from housing and psychiatric services (Frazier, 1985; Lamb & Lamb, 1990).

Maladaptive behaviours

When paired with mental illness, engaging in high-risk maladaptive behaviours, including deliberate self-harm (DSH), aggression, substance abuse, and high-risk sexual practices, has a similar adverse impact on homelessness. Homeless people with psychosis have greater vulnerability to maladaptive behaviours; for example, homeless persons with psychosis are at greater risk of substance abuse than homeless people without a serious mental illness (Drake *et al.*, 1991; Soyka *et al.*, 1993). Additionally, up to 31% of homeless persons may have engaged in self-harm in the past year (Herrman *et al.*, 2004). Further, although people with psychosis are more likely to be victimized than perpetrators (Silver, 2002), there are some indications that the stressors of homelessness can aggravate aggressive behaviour in homeless people with psychosis (Link, Andrews, & Cullen, 1992). Inevitably, psychological distress may arise from the inability to regulate negative emotional experiences, such as paranoia, effectively. Homeless individuals may therefore engage in non-adaptive behavioural methods to cope. These maladaptive behaviours may be preserved through their short-term avoidance function, whereby the behaviour acts as a functional response to prevent, escape, and reduce contact with negatively reinforcing internal events (Blackledge & Hayes, 2001; Gratz, 2006; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Kingston, 2008).

Emotion regulation

Further research is necessary to ascertain the variables that lead homeless people with psychosis to engage in maladaptive behaviours. One such mechanism implicates difficulties in regulating emotion in this process; this study aims to examine the relationship between paranoid thinking, emotion regulation, and maladaptive behaviours in the homeless population. Gross (1999) defines emotion regulation (ER) as the process by which emotional responses are affected, namely, the way in which emotions are experienced and subsequently deployed. A number of fundamental influences have been proposed regarding the development of emotion regulation, including the input of neuroregulatory and behavioural attributes. Current models of emotion regulation are similar to theories proposed by Bowlby (1988) and emphasize the role of attachment and caregiving. Parenting styles are thought to provide an essential base from which infants learn to model regulation strategies, representing a dynamic pathway through which emotional experiences are witnessed and responded to (Livingstone, Harper, & Gillanders, 2009). Infants consequently internalize models of learned regulatory skills, whereby attitudes maintained by the caregiver develop into beliefs relating to ways of coping with difficult emotional experiences (Calkins, 1994). Cole, Michel, and Teti (1994)

propose that environments in which inappropriate attention is given during overwhelming emotional experiences may foster emotional dysregulation. There is some evidence to suggest that the dysfunctional development of cognitive emotion regulation skills may leave individuals susceptible to psychiatric disorder (Cole *et al.*, 1994).

In addition, Gross and Munoz (1995) propose that two alternate strategies are employed to regulate emotion. Skills such as reappraising emotional incidents in non-emotional language, that aim to alter emotional states before the occurrence of the event, are antecedent-focused (Speisman, Lazarus, Mordkoff, & Davison, 1964). Conversely, suppression techniques, which seek to conceal feelings of emotion, are response-focused (Gross & Levenson, 1993). Response-focused strategies are thought to be limited in their ability to alter the internal experience of emotion compared to antecedent methods. Individuals who experience psychosis have demonstrated difficulties with the internal regulation of negative emotions. People with psychosis revealed ineffective emotion regulation strategies relating to emotional expression, processing and experience (Khoury & Lecomte, 2012; Livingstone *et al.*, 2009; van der Meer, van'tWout, & Aleman, 2009). Further, people with schizophrenia were found to employ suppression techniques over reappraisal, thereby inhibiting the emotional experience (Henry, Rendell, Green, McDonald, & O'Donnell, 2008; van der Meer *et al.*, 2009). Furthermore, cognitive models of paranoia emphasize the role of negative emotions and cognitive biases, including anxiety and the tendency to jump to conclusions, in delusion formation (Freeman, Garety, Kuipers, Fowler, & Bebbington, 2002). In the light of these findings, Westermann, Boden, Gross, and Lincoln (2013) suggest that an ER framework may aid our understanding of the psychological mechanisms underpinning paranoia in clinical and subclinical populations.

Recent findings indicate that emotional dysregulation may also unite a number of dissimilar maladaptive behaviours. Effective regulation of distressing emotions reduces the urge to act impulsively and improves behavioural control (Linehan, 1993; Melnick & Hinshaw, 2000). ER difficulties may therefore drive maladaptive behaviours, which are conceptualized as short-term attempts to regulate negative emotions in the absence of more adaptive strategies. ER difficulties have been associated with a number of maladaptive behaviours including high-risk sexual practices, aggression, DSH, and substance abuse (Fox, Axelrod, Paliwal, Sleeper, & Sinha, 2007; Gratz, 2003; Robertson, Daffern, & Bucks, 2012; Tull, Weiss, Adams, & Gratz, 2012). In the homeless population, an inability to modulate emotions when managing stress was related to increased substance misuse (Compas, Malcarne, & Banez, 1992; Wills, Sandy, Yaeger, Cleary, & Shinar, 2001; Wong *et al.*, 2013). These findings indicate that emotional dysregulation increases the likelihood that homeless people may engage in maladaptive behaviours; consequently, the relationship between ER and maladaptive behaviours in the homeless population warrants further research.

This study aims to build upon research investigating the relationship between psychosis and maladaptive behaviours, by examining a specific psychotic symptom: paranoid thinking. It is important to study the processes through which paranoid individuals become involved in maladaptive behaviours in this population, as this subgroup is especially vulnerable and the daily stressors of homelessness are considerable. It is therefore proposed that the engagement in maladaptive behaviours in the homeless population may be affected by both the experience of paranoid thinking and the ability to regulate negative emotions successfully. The following hypotheses were generated:

1. Paranoid thinking will be associated with a greater number of maladaptive behaviours and a lower degree of emotion regulation.

2. Lower levels of emotion regulation will be associated with increased maladaptive behaviours.
3. Emotion regulation will mediate the relationship between paranoid thinking and maladaptive behaviours.

Methodology

Design

This study used a cross-sectional, questionnaire-based, meditational design, in which paranoid thinking was the predictor variable, maladaptive behaviour was the criterion, and emotion regulation was entered as the proposed mediator.

Participants

Based on power calculations by Fritz and Mackinnon (2007), the bias-corrected bootstrap analysis requires 54 participants to achieve 0.8 power in the large-medium condition. This is based on estimates of effect sizes of the a and b mediation pathways, from studies using the same variables (Westermann *et al.*, 2013; $R^2 = 0.63$; Maguire, Greene, & Willoughby, 2017; $R^2 = 0.39$). Evidence suggests that the bootstrap method is applicable in moderate samples of 20–80 cases (Efron & Tibshirani, 1994; Shrout & Bolger, 2002). Participants were 40 currently homeless individuals, recruited from an opportunity sample, over eight sessions, from four homeless hostel organizations in Southampton. Homelessness was defined as living without permanent residence, in homeless hostels or other temporary accommodation. An advert was supplied to the hostels to inform staff and residents about the nature of the research; participants were recruited on the day of the study. There were few participation restrictions except those who did not speak English; participants had a mean age of 37.8 ($SD = 10.99$, range = 20–64), 75% were male, and 92.7% identified as White British.

Materials

Demographics

A demographics questionnaire was constructed to collect participant information relating to age, gender, and ethnicity.

Paranoid thinking

The Green *et al.* (2008) Paranoid Thoughts Scale (GPTS) was the outcome measure for the predictor variable in this study. This two-subscale, self-report measure of delusions of social reference and persecution is widely used and has demonstrated sufficient psychometric properties in clinical and non-clinical populations (Green *et al.*, 2008). Total scores from the combined sum of both subscales were used in this research.

Emotion regulation

The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a 36-item scale designed to measure emotion dysregulation across six domains, including difficulty

accepting negative emotions, engaging in goal-directed behaviour, controlling emotional impulses, reduced emotional awareness and clarity, and limited access to emotion regulation strategies. This study used total DERS scores compiled from the sum of all items. Psychometrically, the DERS is satisfactory, with high internal consistency ($\alpha = .93$), good test–retest reliability over a 4- to 8-week period ($r = .88$), and sound construct and predictive validity (Gratz & Roemer, 2004).

Maladaptive behaviours

The Maladaptive Behaviours Questionnaire (MBQ; Kingston, Clarke, Ritchie, & Remington, 2011) is designed to assess 11 ‘unhelpful’ behaviours in clinical and non-clinical contexts. This study utilized five domains measured by the MBQ: Deliberate self-harm (four items), sexual promiscuity (three items), excessive alcohol use (five items), drug use (six items), and aggression (four items). In this study, both a composite total MBQ score, from the sum of all subscales, and the means from selected subscales were used. The MBQ is psychometrically reliable and has good construct validity, internal consistency ($\alpha = .78-.90$), and test–retest reliability over a 2- to 4-month period ($r = .76-.92$) (Kingston, 2008).

Procedure

Two researchers provided a verbal explanation detailing the sensitive topics covered by the study, and each individual’s voluntary consent to participate. Written consent was taken from every participant. Participants were assessed either independently or in pairs. Participants who had low literacy levels were offered support in private. Pre-task distress was assessed using a visual sliding scale ranging from 0 (*not distressed*) to 100 (*very distressed*). Participants then completed all self-report measures (Demographics Questionnaire, GPTS, MBQ, and DERS). To account for any immediate post-task distress, participants were asked to re-rate their distress on the same 0–100 visual scale as the pre-task measure. If post-task scores were significantly higher following completion, a mood repair exercise was utilized; no incidences of this occurred. Participants were debriefed by the researcher and sign-posted to additional support networks. The process lasted around 35 min; participants were provided with a £5 supermarket voucher for their time. Participant data were anonymized using a unique ID code. This procedure was approved by the University of Southampton’s Ethics and Research Governance (ERGO) Committee.

Statistical analyses

The aim of this study was to examine whether emotion regulation mediated the effect of paranoia on maladaptive behaviours in homeless individuals. For the mediation analysis, paranoia was the independent variable (X), maladaptive behaviours were the dependent variable (Y), and emotion regulation was entered as the hypothesized mediator, see Figure 1. Path ‘a’ denotes that a significant relationship exists between the X (paranoia) and M (emotion regulation), whilst path ‘b’ outlines an association between M (emotion regulation) and Y (maladaptive behaviours), whilst controlling for X (paranoia). The indirect pathway is the product of the combined ‘a’ and ‘b’ paths, thereby including the effect of both paranoia and ER on maladaptive behaviours in the model. The ‘c’ pathway,

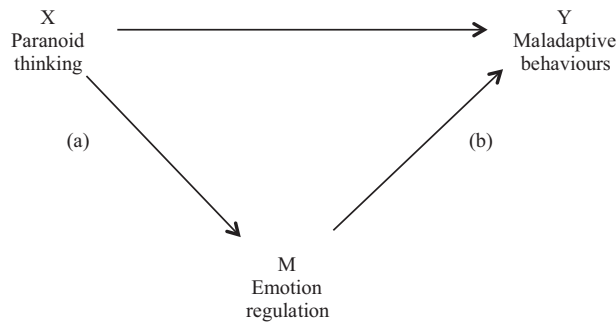


Figure 1. Mediation model to show associations between independent, dependent, and mediator variables.

denoting a relationship between the X (paranoia) and Y (maladaptive behaviours), should decrease in significant when controlling for M (emotion regulation).

To assess the indirect effect of emotion regulation, PROCESS for SPSS (Hayes, 2013) was utilized to employ a nonparametric bootstrapping method. This procedure is thought to be superior to the traditional Baron and Kenny (1986) method in assessing whether the indirect pathway is significantly different from zero (Mackinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2004). This study followed recommendations by Shrout and Bolger (2002), which indicate that bootstrapping should be used to assess for mediation in small to moderate sample sizes. Bootstrapping was applied to the indirect effect with 5,000 replications, producing a series of point estimates to evaluate the sampling distribution. Point estimates specify the unstandardized regression coefficient (Morgan, Mackinnon, & Jorm, 2013), or the relationship between emotion regulation and maladaptive behaviours, after adjusting for the influence of paranoia. A set of 95% confidence intervals was constructed to assess whether the indirect effect is statistically different from zero at $p < .05$ (two-tailed). A mediation is said to be present if zero is not found within the 95% range.

Results

Preliminary analyses

Table 1 displays the mean scores and standard deviations for paranoia, emotion regulation, and maladaptive behaviours. Preliminary analyses conducted on the final sample ($N = 40$) indicated that scores for the DERS and MBQ were normally distributed and suitable for parametric testing. Bootstrapping was applied to correlational and mediation tests incorporating the GPTS variable to account for a non-normal distribution (skew = .84, $SE = .37$; kurtosis = $-.53$, $SE = .73$).

Participants' overall paranoia scores ($M = 77.93$, $SD = 35.6$) were significantly higher than the reported average for a non-clinical paranoia sample ($M = 48.8$, $SD = 18.7$; Green *et al.*, 2008) but less than a sample of individuals experiencing clinical paranoid thinking ($M = 101.9$, $SD = 29.8$; Green *et al.*, 2008). The social reference subscale had the highest mean severity score.

A single sample *t*-test was conducted to determine whether a statistically significant difference existed between overall paranoia from a homeless sample and the non-clinical

Table 1. Means and standard deviations for paranoia, emotion regulation, and maladaptive behaviour variables

Measure	Subscale	<i>M</i>	<i>SD</i>
Paranoid thinking (GPTS)	Persecution	38.28	20.30
	Social reference	39.59	16.45
	Total GPTS	77.93	35.60
Emotion regulation (DERS)	Non-acceptance of emotional responses	15.53	6.08
	Difficulties engaging in goal-directed behaviour	15.33	5.39
	Impulse control difficulties	15.61	5.37
	Lack of emotional awareness	16.50	4.70
	Limited access to emotion regulation strategies	21.25	7.33
	Lack of emotional clarity	12.40	4.74
	Total DERS	96.60	23.75
Maladaptive behaviours (MBQ)	Deliberate self-harm	2.16	1.26
	Drug use	3.71	1.72
	Excessive alcohol use	3.51	1.51
	Sexual promiscuity	2.53	1.47
	Aggression	3.20	1.02
	Total MBQ	72	19.51

paranoia sample (Green *et al.*, 2008). Homeless individuals reported experiencing greater paranoia ($M = 77.93$, $SD = 35.6$) compared to the reported average for a non-clinical sample, $M = 48.8$, $t(39) = 5.18$, $p = .001$; $d = .82$. A second, single sample *t*-test was performed to determine whether a statistically significant difference existed between overall paranoia scores and a clinical paranoia sample (Green *et al.*, 2008). Homeless individuals were found to experience less paranoia ($M = 77.93$, $SD = 35.6$) than the clinical sample, $M = 101.9$, $t(39) = -4.26$, $p = .001$; $d = -.67$.

Similarly, emotion regulation scores in the present homeless sample ($M = 96.60$, $SD = 23.75$) were higher than reported scores from a non-clinical sample ($M = 79.33$, $SD = 19.7$; Gratz & Roemer, 2004). The most prevalent emotion regulation difficulty was 'limited access to emotion regulation strategies when upset' ($M = 21.25$, $SD = 7.33$). A single sample *t*-test was conducted to determine whether a statistically significant difference existed between overall ER scores from this sample and a non-clinical ER sample (Gratz & Roemer, 2004). Homeless individuals reported experiencing greater difficulties with ER ($M = 96.6$, $SD = 23.75$) than the non-clinical sample, $M = 79.33$, $t(39) = 4.5$, $p = .001$; $d = .7$.

The most common maladaptive behaviours were illicit drug use, excessive alcohol use, and aggression. In addition, compared to a sample reported by Kingston (2008), homeless participants revealed higher levels of drug use, $M = 3.71$, $SD = 1.72$; $t(39) = 6.57$, $p = .001$, $d = 1.04$, aggression, $M = 2.53$, $SD = 1.47$; $t(39) = 5.58$, $p = .001$; $d = .9$, and high-risk sexual behaviour, $M = 3.2$, $SD = 1.02$; $t(39) = 2.42$, $p = .05$; $d = .4$.

A bivariate, zero-order correlation analysis was conducted to assess the degree of association between variables; Table 2 presents correlations between paranoia, emotion regulation, and maladaptive behaviours. For this homeless sample, emotion regulation difficulties were positively associated with both paranoia and maladaptive behaviours, whereby paranoia accounted for 48.7% of the variance in emotion regulation difficulties.

Table 2. Correlations: Paranoid thinking, maladaptive behaviours, and emotion regulation

	GPTS	MBQ
GPTS		
MBQ	0.386*	
DERS	0.698**	0.500**

Notes. GPTS = Paranoid Thoughts Scale; MBQ = Maladaptive Behaviours Questionnaire; DERS = Difficulties in Emotion Regulation Scale.

Pearson's *R* correlations based on 5,000 bootstrap samples ($N = 40$).

* $p < .05$, (two-tailed); ** $p < .01$ (two-tailed).

An increase in paranoid thinking ($M = 77.93$, $SD = 35.6$) was associated with a significant increase in engaging in maladaptive behaviours ($M = 72$, $SD = 19.51$). Further, participants who had difficulty regulating their emotions also showed a greater number of maladaptive behaviours.

Mediation model of emotion regulation

Total emotion regulation scores were examined as the potential mediator, so as to test the overall effect of paranoid thinking on maladaptive behaviours. Paranoia was significantly and indirectly associated with maladaptive behaviours through the individual's ability to regulate their emotions ($b = .17$, bootstrapped $SE = .08$, 95% BCa CI [0.03, 0.35], standardized $B = .31$.) This is a medium to large effect size ($K^2 = .25$, 95% BCa CI [0.06, 0.46]). The direct effect (c' path) of paranoia on maladaptive behaviours was non-significant when the mediation path was included in the model ($b = .04$, $t = 0.37$, $p = .72$) indicating that emotion regulation mediated the effect of paranoia on maladaptive behaviour scores. Figure 2 shows the estimates for the indirect effect and 95% confidence intervals for paranoia on maladaptive behaviours, through emotion regulation.

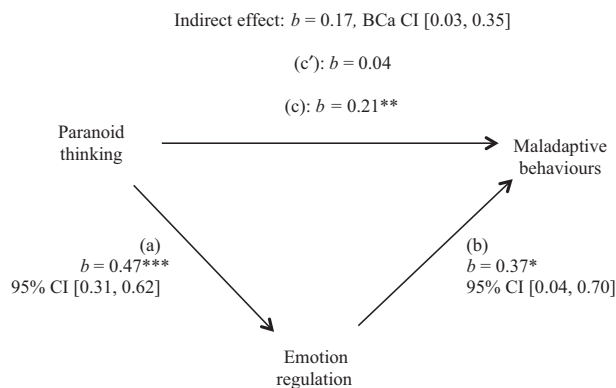


Figure 2. Mediation model for the indirect effect of paranoia on maladaptive behaviours via emotion regulation: mediation pathways and unstandardized B coefficients. Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

Discussion

The present study had three aims. First, we examined the relationship between paranoid thinking and maladaptive behaviours within a homeless sample. Second, we investigated whether emotion regulation was associated with paranoia and maladaptive behaviours. Third, we aimed to identify whether emotion regulation played a significant role in mediating this process. This study aimed to build upon previous research, which highlights a link between psychosis and maladaptive behaviours, by employing a symptom-oriented approach to examine the effect of paranoia.

As predicted, findings revealed increased levels of paranoid thinking and maladaptive behaviours, as well as reduced ER capabilities in homeless individuals, compared to the general population. This pattern was anticipated in the light of numerous studies reporting an over-representation of psychosis and specific maladaptive behaviours in homeless samples (e.g., Aidala, Cross, Stall, Harre, & Sumartojo, 2005; Haw, Hawton, & Casey, 2006; Rees, 2009). In particular, beliefs pertaining to social reference were the most common form of paranoid thinking, which might be expected in non-clinical populations.

In support of the first hypothesis, high levels of paranoia were found to be associated with a greater number of maladaptive behaviours, particularly substance abuse and aggression. These findings are consistent with research that indicates homeless people with psychosis engage in high-risk, life-threatening maladaptive behaviours (Drake *et al.*, 1991; Herrman *et al.*, 2004; Rahav, Nuttbrock, Rivera, & Link, 1998; Link *et al.*, 1992). Second, the results revealed that a high degree of paranoia was associated with lower levels of emotion regulation, which subsequently also builds upon evidence indicating that people with psychotic illness have difficulties in efficiently regulating negative emotional experiences (Livingstone *et al.*, 2009; Owens, Haddock, & Berry, 2013). Further, it was hypothesized that homeless individuals with low emotion regulation capabilities would engage in a greater number of maladaptive behaviours. Results support this prediction, corroborating preliminary findings by Wong *et al.* (2013) who found an association between emotion regulation difficulties and substance abuse in homeless young people.

The key finding from this study supports the main hypothesis, which anticipated that emotion regulation would mediate the relationship between paranoid thinking and maladaptive behaviours. In support of this prediction, these results are the first to demonstrate that ER fully mediated this process, and may therefore play a protective role in this relationship. Findings suggest that homeless people, who have a high degree of paranoia and low levels of adaptive ER, engage in a greater number of maladaptive behaviours. Equally, homeless people who are paranoid, but exhibit greater ER strategies, may be less likely to participate in DSH, substance abuse, risky sexual practices, and aggressive behaviours, which may in turn maintain homelessness. To our knowledge, this is a novel finding, which adds to the growing body of research that attempts to explain the psychological mechanisms underpinning severe mental illness and maladaptive behaviours.

These findings are indicative of a broad difficulty in regulating emotions, in homeless people who experience paranoid thinking. One explanation for these findings can be interpreted in line with the model of emotion regulation proposed by Gross and Munoz (1995). The model conceptualizes emotion regulation as having two core functions pertaining to how emotion regulation strategies are utilized. Strategies employed to alter states of arousal before the emotion occurs are said to be antecedent-focused (Gross &

Munoz, 1995; Livingstone *et al.*, 2009). Such methods have been found to affect both the subjective experience and the outward expression of emotion (Livingstone *et al.*, 2009). Conversely, approaches, which attempt to alter an emotion whilst concurrently experiencing the emotion, are response-focused emotion regulation strategies. Notably, the result of employing response-focused emotion regulation is that the expression of emotion is modified, but the internal experience remains untouched. One interpretation of our findings is that the homeless individuals in this study had limited access to a range of antecedent-focused emotion regulation strategies to reduce the affective arousal associated with their paranoia. When these individuals subsequently engaged in a variety of maladaptive behaviours, it is feasible that they were employing a series of response-focused emotion regulation strategies to modify the emotional experience of paranoid thinking. These maladaptive strategies would serve only to impact upon the outward emotional expression, and not the subjective experience of paranoia (Gross & Munoz, 1995). In this case, homeless individuals living with psychosis and who have limited emotion regulation capabilities may engage in maladaptive behaviours in an attempt to regulate their emotions where other strategies have failed. This is reflected in our findings, which indicate that the most prominent ER difficulty for this sample was accessing strategies to regulate emotions when distressed. Such individuals may choose to participate in other behaviours, which, although maladaptive in nature, have the shared function of facilitating short-term relief from adverse psychological states.

A second domain, in which people who have experienced psychosis may have difficulty, is the ability to reappraise negative emotions. Difficulties in cognitive reappraisal have been highlighted in the cognitive model of persecutory delusions, which proposes that paranoid thinking develops from an interaction between arousal, cognitive biases, and emotional disturbance (Freeman *et al.*, 2002). It is entirely possible that paranoid individuals, who experience cognitive biases such as jumping to conclusions, are impaired by these in a way that affects their ability to regulate emotions (Garety, Hemsley, & Wessely, 1991; Livingstone *et al.*, 2009; van der Meer *et al.*, 2009). For example, Westermann and Lincoln (2011) propose that the tendency to jump to conclusions about the meaning of an event, before gathering sufficient evidence, may limit attempts to reappraise emotionally charged events. Further, Freeman *et al.* (2002) indicate that the use of safety behaviours, including withdrawal from essential social support networks, may serve as an additional maladaptive ER strategy and preserve paranoid thinking. This may be an important consideration when applying our findings to the homeless population, where social withdrawal and isolation are commonly observed.

Implications for intervention

This research has multiple implications for policy and therapeutic intervention. Our findings confirm that a significant proportion of homeless people may be at risk of serious and enduring mental health problems. This should be recognized in the form of specialist community services with access to psychological interventions, to support homeless individuals, and to prevent tenancy breakdown in those living alone with mental illness.

Although the first priority for homeless people with psychosis may be the procurement of sustenance and shelter, the psychological needs of these individuals are also paramount. An integrated approach to treating paranoid thinking appears appropriate with homeless clients who have multiple complex needs. There is value in considering internal ER strategies as targets for intervention; two potential treatment protocols, which address difficulties in regulating emotions, are mentalization-based

therapy (MBT; Bateman & Fonagy, 2004) and dialectical behaviour therapy (DBT; Linehan, 1993). Emotional deficits in people with psychosis should be acknowledged alongside their positive symptoms (Chadwick, 2006). Indeed, increasing the ability to regulate emotions effectively may result in a reduction in the self-destructive behaviours that initiate and perpetuate homelessness. MBT has been found to successfully reduce maladaptive behaviours such as self-harm (Bateman & Fonagy, 2013) and has a positive effect on emotion dysregulation in those who have borderline personality disorder (Gratz & Gunderson, 2006). MBT has also been used more broadly in individuals experiencing depression, addiction, and antisocial behaviour (Bateman & Fonagy, 2012). Dialectical behaviour therapy encourages the individual to practice mindfulness and acceptance (Linehan, 1993), and it is feasible that within this therapeutic framework, professionals working with homeless clients may model adaptive ER strategies, to bring about a tolerance of emotional distress. Homeless clients suffering from paranoid thoughts may therefore learn practical emotion regulation skills, which could serve as an ER toolkit and limit the urge to engage in potentially self-damaging behaviours. It is suggested that future research should aim to establish the strength of the relationships between paranoia, emotion regulation, and maladaptive behaviours. Following this, it would be beneficial to assess the effectiveness of interventions such as MBT and DBT, on paranoia and maladaptive behaviours through their influence on emotion regulation.

Limitations

The results from this study may be limited by methodical constraints relating to the sample and design. In the first instance, it may not be possible to generalize these results to clinical psychosis samples. However, evidence supporting the psychosis continuum hypothesis suggests that underlying psychological processes evident in clinical persecutory delusions can be observed, albeit less profoundly, in subclinical paranoia populations (e.g., Freeman *et al.*, 2005; van Os, 2003). In this regard, it is conceivable that the results of this study may inform our understanding of paranoid delusions seen in homeless individuals with a formal diagnosis of psychosis. A further sampling limitation was that the participants were mostly male and living in hostel accommodation; the opportunity sample was small in size, and as such, the study was slightly under-powered. Future research might, however, benefit from a larger, more epidemiologically representative sample, to account for the increasing proportion of homeless women and rough sleepers. Similarly, the self-report measures employed may have compromised the validity of the assessment due to biases pertaining to recall and social desirability. The cross-sectional nature of the study design indicates that causality cannot be inferred from these results alone; further research employing a longitudinal design would permit more concrete conclusions to be drawn about the direction of causality.

Conclusions and future directions

Future research should consider using a larger sample, which, although difficult to obtain, would permit a greater understanding as to the generalizability of our results to psychosis populations. Moreover, future designs could be extended to incorporate experience sampling methods (Delespaul, 1995; Hektner, Schmidt, & Csikszentmihalyi, 2007) to measure naturalistic variations in paranoia and emotion, and their association with maladaptive behaviours in the real world. This longitudinal method has been used

extensively with paranoia populations (for a review, see Myin-Germeys, Delespaul, & van Os, 2003) and would evade the recall bias that is common to retrospective self-reports.

This study provides valuable insight into the difficulties in emotion regulation and paranoia experienced by homeless individuals, a population which is typically under-researched. The heightened affectivity observed in psychosis populations suggests that homeless individuals who are paranoid are likely to be a vulnerable subgroup, at risk of making improvised attempts to regulate their emotional distress through engagement in various maladaptive behaviours. In this regard, it seems that emotion regulation is a valid and promising concept in which to begin to comprehend why those living with severe mental illness engage in behaviours that may initiate or extend periods of homelessness. Psychological interventions may serve to enhance the lives of homeless individuals living with paranoia, by acknowledging their emotional difficulties, promoting distress tolerance and addressing their concomitant, self-destructive, maladaptive behaviours. This in turn may exert a positive impact on homelessness.

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