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Stressful life events and material deprivation in hoarding disorder

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ABSTRACT

Traumatic life events and early material deprivation have been identified as potential environmental risk factors for the development of pathological hoarding behavior, but the evidence so far is preliminary and confounded by the presence of comorbid obsessive–compulsive disorder (OCD). This study retrospectively examined the occurrence of traumatic/stressful life events and material deprivation in four well-characterized groups: hoarding disorder without comorbid OCD (HD; $n = 24$), hoarding disorder with comorbid OCD (HD + OCD; $n = 20$), OCD without hoarding symptoms (OCD; $n = 17$), and non-clinical controls (Control; $n = 20$). Participants completed clinician and self-administered measures of hoarding, OCD, depression, psychological adjustment, and traumatic experience. Semi-structured interviews were undertaken to assess the temporal relation between traumatic/stressful life events and the onset and worsening of hoarding symptoms, and to determine the level of material deprivation. Although rates of post-traumatic stress disorder were comparable across all three clinical groups, hoarders (regardless of the presence of comorbid OCD) reported greater exposure to a range of traumatic and stressful life events compared to the two non-hoarding groups. Results remained unchanged after controlling for age, gender, education level, depression, and obsessive–compulsive symptoms. The total number of traumatic life events correlated significantly with the severity of hoarding but not of obsessive–compulsive symptoms. About half (52%) of hoarding individuals linked the onset of hoarding difficulties to stressful life circumstances, although this was significantly less common among those reporting early childhood onset of hoarding behavior. There was no link between levels of material deprivation and hoarding. Results support a link between trauma, life stress and hoarding, which may help to inform the conceptualization and treatment of hoarding disorder, but await confirmation in a representative epidemiological sample and using a longitudinal design.

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1. Introduction

The human desire to collect and save is not uncommon: indeed, from an evolutionary perspective, the tendency to collect or hoard possessions could be adaptive, by ensuring survival when resources become scarce (Grisham & Barlow, 2005). However, when hoarding behavior is taken to extreme lengths, the resultant consequences can significantly interfere with many aspects of private, social, and occupational life. For example, degree of clutter can impede the completion of household chores and lead to relationship conflict, embarrassment, social withdrawal and the inability to work (Frost & Hartl, 1996). At its most severe, hoarding can pose serious risks to health and safety, such as falling, fire, and sanitation problems, which are especially common among older people (Frost, Steketee, & Williams, 2000; Steketee, Frost, & Kim, 2001).

Hoarding can be a symptom of multiple organic and mental disorders (Pertusa et al., 2010; Steketee & Frost, 2003). Although hoarding is commonly associated with obsessive–compulsive disorder (OCD), it is not directly mentioned in DSM IV-TR or ICD-10 as a symptom of OCD. In DSM IV-TR, hoarding is listed as one of the 8 current criteria for obsessive–compulsive personality disorder (OCPD). In the description of the differential diagnosis between OCPD and OCD, DSM IV-TR states that '*a diagnosis of OCD should be considered especially when hoarding is extreme (e.g., accumulated stacks of worthless objects present a fire hazard and make it difficult for others to walk through the house)*' (p. 728). Thus, DSM IV-TR assumes that, when severe, hoarding can be a symptom of OCD. Of note, this was not the case in any of the previous editions of the DSM (Mataix-Cols et al., 2010). Most of the studies published in the last two decades have considered hoarding a symptom – or symptom dimension – of OCD, and hoarding is included in most structured interviews and questionnaires of OCD symptoms, such as the Yale-

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Brown Obsessive Compulsive Scale (Y-BOCS; Goodman et al., 1989) and the *Obsessive–Compulsive Inventory-Revised* (OCI-R; Foa et al., 2002), among others.

Despite the common assumption that hoarding is a symptom of OCD, there is an increasing body of evidence supporting the separation of hoarding from OCD (Mataix-Cols et al., 2010; Pertusa et al., 2010; Rachman, Elliott, Shafran, & Radomsky, 2009; Saxena, 2008). First, a substantial number of individuals with severe hoarding do not display other OCD symptoms (Pertusa et al., 2008; Samuels et al., 2008). Second, although fears of losing personally important or valuable things resemble 'obsessions' and urges to save items and excessive acquisition resemble 'compulsions,' there are a number of important phenomenological differences between hoarding and prototypical OCD symptoms (Mataix-Cols et al., 2010; Rachman et al., 2009). Third, correlational studies (Abramowitz, Wheaton, & Storch, 2008; Grisham, Frost, Steketee, Kim, & Hood, 2006; Olatunji, Williams, Haslam, Abramowitz, & Tolin, 2008; Wu & Watson, 2005) have shown that correlations between hoarding and prototypical OCD symptoms are in the small to moderate range, comparable to correlations with measures of anxiety and depression. By contrast, prototypical OCD symptoms show stronger inter-correlations. Fourth, unlike typical OCD symptoms, hoarding symptoms worsen over each decade of life (Ayers, Saxena, Golshan, & Wetherell, 2009; Grisham et al., 2006); distress and disability often appear late in the course of the syndrome and are usually linked to the intervention of third parties like relatives or local authorities. Fifth, there are important differences between hoarding and OCD in terms of hypothesized underlying cognitive-behavioral processes (Frost & Hartl, 1996; Steketee & Frost, 2003). Sixth, hoarding symptoms may have a distinct neural substrate to that of OCD (An et al., 2009; Saxena et al., 2004; Tolin, Kiehl, Worhunsky, Book, & Maltby, 2009). Finally, hoarding symptoms tend to be less responsive to evidence-based treatments for OCD, including exposure and response prevention as well as serotonin reuptake inhibitors (see Pertusa et al., 2010 for a comprehensive review). These converging sources of evidence have led to the proposal of a new diagnostic entity, sometimes referred to as 'Compulsive Hoarding Syndrome' (Saxena & Maidment, 2004) or, more recently, 'hoarding disorder', with its own provisional diagnostic criteria (American Psychiatric Association, 2010; Mataix-Cols et al., 2010).

Although research into the etiology of hoarding disorder is still in its infancy, both genetic and specific environmental factors are thought to play a role (Iervolino et al., 2009). It is currently unclear what these unique environmental risk factors are, but there is preliminary evidence that traumatic life events may be common in this clinical group and, in some cases, temporally linked with the onset of hoarding problems. Investigating the relation between life events and the onset and development of hoarding may help inform the clinical conceptualization of hoarding disorder, and lead to more effective treatments. In a study by Hartl, Duffany, Allen, Steketee, and Frost (2005), hoarding individuals ($n = 26$, 8 of whom were diagnosed with comorbid OCD) reported a greater frequency and number of different types of traumatic events (especially experiencing something taken by force, being physically rough-handled, and forced sexual activity) compared to a control group of 36 non-hoarding participants. Another study by Cromer, Schmidt, and Murphy (2007) replicated and extended these findings in a large OCD sample ($n = 180$). Participants were classified as hoarders if they scored in the top 25% of the *Saving Inventory-Revised* (SI-R; Frost, Steketee, & Grisham, 2004) and reported hoarding as their predominant OCD symptom). Hoarders ($n = 43$) reported more traumatic life events than either the non-hoarding OCD group ($n = 51$) or a mixed sample of individuals not meeting either definition ($n = 86$). Furthermore, the experience of traumatic life events among hoarders correlated with the severity of hoarding symptoms after controlling for age, age of OCD onset, OCD symptoms, and mood and anxiety comorbidity. This suggests that trauma may be associated with hoarding above and beyond the link between trauma and OCD (Cromer et al., 2007). However, to fully test this hypothesis, studies assessing individuals with 'pure hoarding' (that is, without comorbid OCD) are needed.

The literature also suggests that in some cases, there may be a direct self-reported temporal relation between traumatic life events and the onset of hoarding behavior, although the results so far are mixed. Grisham et al. (2006) found that 55% of 51 hoarders (it is unknown how many of whom also had OCD) had experienced a stressful life event (either positive or negative) at the onset of hoarding symptoms, whereas others described the development of difficulties in terms of a slow, steady progression. Interestingly, individuals who reported no stressful life event at the time of symptom onset showed a significantly earlier age of onset than those who did, perhaps suggesting a heterogeneous etiology and course of hoarding, with childhood onset suggestive of a more characterological phenomenon, and later onset associated more directly with stress-related events. In a study by Pertusa et al. (2008), hoarding was reportedly triggered or worsened by a traumatic event in 11% of hoarders without OCD, compared to 24% of hoarders with OCD, although this difference between groups was not statistically significant. By contrast, in a study of 18 elderly hoarders including 3 participants with comorbid OCD, no one reported a life event as a cause or trigger of hoarding symptoms (Ayers et al., 2009). Participants were asked to recall two major life events during each decade, but those events reported were considered neutral rather than traumatic (e.g., going to school, joining the military). Discrepancies between studies may reflect methodological differences with regard to definition and identification of stressful life events and eliciting links between life experience and hoarding symptoms.

Although common lore suggests that hoarding could be linked to material deprivation, the limited available data do not support this. Frost and Gross (1993) found that 28% of hoarders reported having experienced material deprivation, and many sufferers considered this a cause of their hoarding behavior. However, no differences were found between hoarders and non-hoarders in their responses to the question 'When you were young, was there a period of time when you had very little money?', nor were there any differences in how 'impoverished' or 'well-off' they described their childhood. In a further study by Seedat and Stein (2002), only 2 out of 15 individuals cited material deprivation as having contributed to hoarding symptoms, suggesting that this may be a relevant factor only in a minority of cases. However, given the limited amount of research to date, further exploration of the relationship between material deprivation and hoarding is warranted.

The purpose of this study was to further investigate the relation between hoarding, traumatic (or generally stressful) life events, and material deprivation, controlling for the presence of OCD. To this end, we recruited samples of hoarding disorder without comorbid OCD (HD), hoarding disorder with comorbid OCD (HD + OCD), OCD without hoarding symptoms (OCD) and non-clinical controls (Control). We hypothesized that hoarders (regardless of the presence of comorbid OCD) would report a greater lifetime frequency of traumatic events when compared to OCD participants without hoarding symptoms and non-clinical controls, but no greater frequency of material deprivation. We further predicted that traumatic and stressful life events would be temporally linked to the onset of hoarding problems in a substantial proportion of cases.

2. Materials and methods

2.1. Participants

Eighty-one participants were recruited for this study, pertaining to the following groups: hoarding disorder without comorbid

OCD (HD; $n = 24$), hoarding disorder with comorbid OCD (HD + OCD; $n = 20$), OCD without hoarding symptoms (OCD; $n = 17$) and non-clinical controls (Control; $n = 20$). Participants in the 3 clinical groups were recruited via advertisements in patient organization newsletters or websites (e.g., OCD Action, OCD UK), from hoarding support groups, and from a hoarding conference. Some of these participants took part in a previous study (Pertusa et al., 2008) but were completely reassessed for the current study. Non-clinical controls were recruited via a circular e-mail to non-academic university staff at King's College London.

Research psychiatrists (S.S. or A.P.) interviewed all participants either face-to-face or over the telephone, using validated structured interviews, in order to confirm diagnosis and suitability for the study. In cases of diagnostic uncertainty, the research team met to discuss the case and reach a consensus. Participants were excluded if they met DSM-IV criteria for dementia (or showed signs of cognitive impairment), psychosis, bipolar I disorder or substance abuse.

The following criteria were applied to identify severe hoarding cases (Frost & Hartl, 1996; Pertusa et al., 2008): (1) acquisition of and failure to discard a large number of possessions; (2) a living space sufficiently cluttered in a way that precludes activities for which the space was designed; (3) significant distress or functional impairment caused by hoarding; (4) clutter persisting for at least 6 months; (5) hoarding behavior not attributable to other psychiatric disorders (e.g., OCD, dementia, bipolar disorder, major depression). These criteria largely overlap with the recently proposed criteria for hoarding disorder (American Psychiatric Association, 2010; Mataix-Cols et al., 2010).

Individuals who fulfilled criteria for hoarding disorder were then divided into two groups (HD or HD + OCD) based on the presence or absence of clinically significant prototypical OCD symptoms of sufficient intensity to meet DSM-IV diagnostic criteria for OCD (Pertusa et al., 2008). These symptoms were considered clinically significant if they occupied more than 1 h per day, were distressing, and interfered with functioning. Individuals were assigned to the non-hoarding OCD group (OCD) if they met diagnostic criteria for OCD but did not meet criteria for hoarding disorder based on the clinical diagnostic interview. Individuals in the non-clinical control group did not meet current criteria for any mental disorder according to the structured psychopathological interview.

Ten participants were excluded from the study after the screening interview because they were diagnosed with bipolar disorder ($n = 2$) or their symptoms were not severe enough to meet criteria for HD and/or OCD ($n = 8$).

The study was approved by the King's College London Research Ethics Committee. Written consent was obtained from all participants, and they were compensated for their time and any additional travel expenses.

2.2. Measures

2.2.1. Clinician-administered

Mini International Neuropsychiatric Interview (MINI; Sheehan et al., 1998): All participants were interviewed using the MINI to determine the presence of major DSM-IV Axis I diagnoses including a range of mood, anxiety and psychotic disorders.

Structured Clinical Interview for DSM-IV (SCID-II; First, Gibbon, William, & Spitzer, 1994): The Obsessive Compulsive Personality Disorder (OCPD) module of the SCID-II was used to assess the presence and traits of OCPD in all but the non-clinical control group.

Dimensional Yale-Brown Obsessive Compulsive Scale (DY-BOCS; Rosario-Campos et al., 2006): The DY-BOCS consists of an 88-item self-report checklist, and a series of clinician-administered scales used to assess the presence and severity of the following 6 symptom dimensions of OCD: contamination/cleaning; harm; collecting/hoarding; symmetry/ordering; sexual/religious; and miscellaneous obsessions and compulsions). The scale has demonstrated high inter-rater reliability (>.98) and internal consistency (α coefficients range from .75 to .96 for each dimension). Excellent convergent validity is evidenced by the strong correlation between the DY-BOCS global score and the Y-BOCS total score (Pearson's $r = .82$) (Rosario-Campos et al., 2006). The DY-BOCS was not administered to the control group.

Temporal relation between traumatic life events and symptom onset: A semi-structured, clinician-administered interview was designed specifically for this study. It contains a section inviting participants to retrospectively and freely recall any stressful life events experienced in each decade of their life. Participants were subsequently asked to recall the age at which symptoms of hoarding (divided into the three core characteristics of difficulty discarding, clutter, and excessive acquisition) and/or OCD first began to emerge (i.e., when participants were first aware of any symptoms, regardless of severity level), followed by the age of onset of clinically significant problems (i.e., when symptoms were perceived to significantly impair function). This information was then plotted on a time-line and used as a tool to explore the temporal relation between life events and the onset and worsening of hoarding and obsessive–compulsive symptoms. A coding system was developed to encapsulate the main categories that emerged from participant responses as follows:

(1) Self-identified link between onset of (a) initial symptoms, or (b) clinically significant symptoms and:

(a) specific stressful life event (e.g., bereavement, relationship break-up, loss of employment, eviction, divorce);
(b) ongoing, stressful environmental factors (e.g., style of parenting/upbringing, long-term bullying, general difficulties with socializing, non-specific background stress);
(c) 'neutral', circumstantial factors (e.g., moving to own place, living alone, financial situation, moving to a larger/smaller sized home).

(2) No self-identified link between symptom onset and any life events/circumstances.

Material deprivation: The semi-structured interview also included a section about lifetime experience of material deprivation, which extends the range of questions asked by Frost and Gross (1993). Participants were asked to report any previous lack of money, food, adequate clothing, or shelter. These items were treated as categorical variables (i.e., based on a yes/no response) and also contributed to a total material deprivation score on a scale of 0–4 according to the number of separate categories endorsed (e.g., a participant who had experienced deprivation in each of the four areas would obtain a score of 4). Participants were also asked how they would characterize their childhood in terms of material possessions: (a) in general, and (b) compared with their peers. This was measured on a scale from 1 to 5 (where 1 = very impoverished, 3 = average, and 5 = very well off).

2.2.2. Self-administered

Saving Inventory-Revised (SI-R; Frost et al., 2004): The SI-R is a 23-item self-report measure of hoarding symptoms, and includes three factor analytically derived subscales assessing severity of difficulty discarding, clutter and excessive acquisition. The SI-R has

Table 1
Sociodemographic characteristics of the four groups.

	Hoarding groups			Non-hoarding groups		Statistics		
	HD (n = 23)	HD + OCD (n = 20)	Combined (n = 43)	OCD (n = 17)	Control			
	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	F	df	p
Age (years)	56.1 8.0	47.7 10.4	n/a	46.0 13.4	40.2 12.1	7.70	3	<0.001
	%	%	%	%	%	χ^2	df	p
	N	N	N	N	N			
Female	83.3 20	80.0 16	81.8 36	58.8 10	70.0 14	3.61	2	.154
University-level education	56.5 13	55.0 11	55.8 24	23.5 4	95.0 19	23.33	4	<0.001
Live alone	56.5 13	65.0 13	60.5 26	35.3 6	30.0 6	8.76	4	.073
Current psychological therapy	90.9 20	85.0 17	88.1 37	76.5 13	n/a	1.27	1	.424
Current psychiatric medication	30.4 7	55.0 11	41.9 18	52.9 9	n/a	0.60	1	.437
Family history of hoarding	52.2 12	50.0 10	51.2 22	11.8 2	n/a	7.88	1	.005
Family history of OCD	34.8 8	50.0 10	41.9 18	47.1 8	n/a	0.13	1	.714
Other family psychiatric history	69.6 16	55.0 11	62.9 27	52.9 9	n/a	0.49	1	.483

HD: hoarding disorder; OCD: obsessive–compulsive disorder.

demonstrated good internal consistency (α = .92), test–retest reliability (r = .86) and convergent validity, with significant correlations between difficulty discarding and clutter subscale scores and both self-rated and observer-rated clutter at home. The measure clearly differentiates hoarding from non-hoarding individuals (mean of hoarding participants in the original validation study = 53.7, SD = 14; non-hoarding participants = 24, SD = 12) (Frost et al., 2004; Tortella-Feliu et al., 2006).

Obsessive–Compulsive Inventory-Revised (OCI-R; Foa et al., 2002): The OCI-R is a shortened version of the Obsessive Compulsive Inventory (OCI; Foa, Kozak, Salkovskis, Coles, & Amir, 1998) and consists of 18 items designed to assess the severity of OCD symptoms. It contains 6 subscales, which broadly correspond to the major symptom dimensions of OCD. The OCI-R demonstrates good internal consistency (α = .81–.93), test–retest reliability (.57–.91), and differentiates well between individuals with and without OCD (Foa et al., 2002).

Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961): The BDI is a widely used 21-item self-report measure of depression severity that has demonstrated high internal consistency (α = 0.81–0.86), and good concurrent validity (r = .72–.73) (Beck, Steer, & Garbin, 1988).

Work and Social Adjustment Scale (WSAS; Mundt, Marks, Shear, & Greist, 2002): The WSAS is a brief 5-item self-report measure of functional impairment with good internal consistency (α = 0.70–0.94) and test–retest reliability (.73). Scores are sensitive to disorder severity and treatment-related change (Mundt et al., 2002; Mataix-Cols et al., 2005).

Trauma History Questionnaire (THQ; Green, 1996): The THQ is a 24-item measure assessing lifetime exposure to a range of potentially traumatic events within the domains of crime (e.g., mugging, robbery), general disaster and trauma (e.g., natural or man-made disasters, actual or feared injury/illness/death of self or others), and physical/sexual experiences (e.g., forced sexual contact, attacked or beaten causing injury). The questionnaire was scored in two different ways: the total number of traumatic events endorsed by each participant (based on a yes/no response format) and the total number of traumatic events within each of the three domains.

2.3. Statistical analyses

For all analyses, a preliminary test was conducted to explore any differences between the two hoarding groups (HD vs. HD + OCD). Where no significant differences were detected, the hoarding group was collapsed into a single group of hoarders and compared with the non-hoarding OCD and non-clinical control groups. In cases where significant differences were found between the two hoarding groups, all four comparison groups remained separate in the analyses.

Continuous variables were inspected for normality with the Shapiro–Wilk Test of Normality, and visual inspection of histograms, stem-and-leaf plots, and Q–Q plots. Where appropriate, data were compared using an independent t-test or one-way analysis of variance (ANOVA), followed by Tukey's post hoc test to correct for multiple testing. In the case of unequal variances between groups (Levene's test = < .05), Tamhane's T2 was used as an alternative post hoc test. Analyses of covariance (ANCOVA) were used to control for possible confounding variables. For those variables where the assumption of normality was clearly violated, non-parametric (Mann–Whitney and Kruskal–Wallis) tests were used. Spearman's rho (two-tailed) was used to explore correlational relationships between continuous variables within the hoarding and OCD groups. Categorical data were compared using Pearson's chi-square or Fisher's exact tests.

3. Results

The sociodemographic characteristics of the 4 groups are shown in Table 1. Individuals in the HD group were significantly older than those in the OCD and Control groups, but no different to the HD + OCD group. The level of education among participants in the non-clinical control group was significantly higher compared to the clinical groups, with over 95% having completed university-level studies (χ^2 = 23.33, d = 4, p < .001). Moreover, hoarders had a significantly higher level of education compared to the OCD group. However, since ANCOVAs controlling for age and education level

Table 2
Comorbidity with Axis I disorders and OCPD.

	Hoarding groups			Non-hoarding group			
	HD (n = 24)	HD + OCD (n = 20)	Combined (n = 44)	OCD (n = 17)	Statistics		
DSM-IV diagnosis	% *N*	% *N*	% *N*	% *N*	χ^2	df	*p*
MDE current	8.3 2	0 0	4.5 2	11.8 2	1.04	1	.569
MDE recurrent	41.7 10	0 0	n/a	41.2 7	11.50	2	.003
Dysthymia	12.5 3	25.0 5	18.2 8	11.8 2	0.37	1	.711
Hypomanic episode	8.7 2	5.0 1	7 3	0 0	1.25	1	.551
Panic no agoraphobia	4.2 1	0 0	2.3 1	11.8 2	2.36	1	.185
Panic Disorder	4.2 1	0 0	2.3 1	0 0	0.39	1	1.000
Agoraphobia no panic	0 0	0 0	0 0	5.9 1	2.63	1	.279
Social Phobia	20.8 5	30.0 6	25 11	5.9 1	2.84	1	.151
PTSD	8.3 2	0 0	4.5 2	11.8 2	1.04	1	.569
Eating disorder	20.8 5	15.0 3	18.2 8	0 0	3.56	1	.092
OCPD	% *N*	% *N*	% *N*	% *N*	χ^2	df	*p*
Preoccupation with detail	37.5 9	60.0 12	47.7 21	64.7 11	1.42	1	.234
Perfectionism	45.8 11	80.0 16	n/a	47.1 8	6.23	3	.044
Devotion to work	20.8 5	25.0 5	22.7 10	11.8 2	0.93	1	.481
Scrupulous	29.2 7	25.0 5	27.3 12	23.5 4	0.09	1	1.00
Hoarding	100 24	100 20	100 44	0 0	56.30	1	<0.001
Reluctant to delegate	62.5 15	60.0 12	61.4 27	41.2 7	2.03	1	.155
Miserliness	16.7 4	20.0 4	18.2 8	0 0	3.56	1	.092
Rigidity	37.5 9	30.0 6	34.1 15	17.6 3	1.59	1	.207
OCPD with hoarding criterion	50.0 12	65.0 13	56.8 25	17.6 3	7.58	1	.006
OCPD excluding hoarding criterion	33.3 8	30.0 6	31.8 14	17.6 3	1.23	1	.350

HD: hoarding disorder; OCD: obsessive–compulsive disorder.

did not modify the overall results, these variables were not further considered.

3.1. Axis I and OCPD comorbidity

In general, the 3 clinical groups had comparable levels of psychopathology (Table 2). Patients with HD or OCD were significantly more likely to suffer from recurrent depression than patients with HD + OCD (χ^2 = 11.50, df = 2, exact p = .003). There were no other significant differences between the hoarding and OCD groups. Overall, there was a low rate of comorbid post-traumatic stress disorder (PTSD), with only two participants from both the HD and OCD groups meeting diagnostic criteria.

A significantly greater proportion of hoarders met diagnostic criteria for OCPD (that is, they endorsed at least four criteria) compared to non-hoarding OCD participants (χ^2 = 7.58, df = 1, p = .006). However, after the exclusion of the hoarding/collecting criterion, hoarding individuals were no more likely to warrant an OCPD diagnosis than OCD non-hoarding participants (χ^2 = 1.23, df = 1, exact p = .350). Considering the OCPD criteria individually, participants in the HD + OCD group were significantly more likely to endorse the perfectionism criterion, compared with the HD and OCD groups.

3.2. Severity of hoarding, depression and impairment

Overall, scores on the SI-R, DY-BOCS hoarding, and OCI-R hoarding subscales indicated substantial symptom severity (Table 3). There were no statistically significant differences in hoarding severity between the two hoarding groups on either clinician or self-administered measures. However, hoarders with OCD obtained significantly higher scores on the difficulty discarding subscale of the SI-R, compared to hoarders without OCD (F = 4.436, df = 1, p = .041). As expected, the two hoarding groups had significantly greater scores on these measures than the OCD and Control groups (all p values < .001) and, once the hoarding subscales were removed, the two OCD groups had significantly higher scores on OCD scales than the HD and Control groups (all p values < .001). The three clinical groups showed similar levels of depressive symptomatology (BDI) as well as overall functional impairment (WSAS),

Table 3
Severity of hoarding, obsessive–compulsive symptoms, depression, and overall impairment.

	Hoarding groups			Non-hoarding groups		Statistics		
	HD (n = 23)	HD + OCD (n = 20)	Combined (n = 43)	OCD (n = 17)	Control (n = 20)			
	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	F	df	p
Hoarding								
DY-BOCS hoarding subscale	9.3 1.8	9.9 2.2	9.6 2.0	0.4 1.1	n/a	304.4	1	<0.001
SI-R Total	56.2 15.8	60.3 14.4	58.0 15.2	14.2 12.6	14.2 5.1	129.3	2	<0.001
SI-R Discard	18.9 4.7	21.7 3.6	n/a	6.4 5.9	4.2 3.1	76.9	3	<0.001
SI-R Clutter	26.0 8.3	25.9 7.7	25.9 8.0	4.4 4.3	2.9 2.4	123.0	2	<0.001
SI-R Acquisition	11.3 4.6	12.6 5.5	11.9 5.0	3.4 4.1	2.4 2.0	44.1	2	<0.001
OCI-R hoarding subscale	9.0 2.5	9.5 2.7	9.2 2.6	1.9 2.1	1.1 .93	123.3	2	<0.001
Obsessions and compulsions								
Global DY-BOCS	8.8 3.0	10.7 2.8	n/a	10.5 2.7	n/a	2.8	2	.065
Global DY-BOCS minus hoarding	1.9 3.1	9.4 3.1	n/a	10.8 2.0	n/a	58.5	2	<0.001
OCI-R Total	19.5 9.8	34.3 9.2	n/a	27.0 13.2	4.5 3.1	35.0	3	<0.001
OCI-R minus hoarding	10.4 8.3	24.8 9.1	n/a	25.1 12.1	3.3 2.9	30.4	3	<0.001
Depression and impairment								
BDI	14.4 9.6	19.8 9.3	17.1 9.7	17.0 11.2	3.4 3.5	17.3	2	<0.001
WSAS	19.3 8.9	22.5 8.1	20.8 8.6	17.2 9.5	2.9 4.7	34.0	2	<0.001

HD: hoarding disorder; OCD: obsessive–compulsive disorder.

Table 4
Age of onset of hoarding and OCD symptoms.

	Hoarding groups			Non-hoarding group	Statistics		
	HD (n = 24)	HD + OCD (n = 20)	Combined (n = 43)	OCD (n = 17)			
Hoarding	Mean SD	Mean SD	Mean SD	Mean SD	F	df	p
Difficulty Discarding (A)	16.8 13.4	14.7 9.7	15.8 11.7	n/a	0.3	1	.570
Clutter (A)	21.1 14.9	20.8 10.0	21.0 12.8	n/a	0.0	1	.959
Excessive Acquisition (A)	19.1 14.4	16.0 9.5	18.0 12.7	n/a	0.3	1	.547
Difficulty Discarding (B)	35.4 13.2	27.9 8.9	31.9 11.9	n/a	3.8	1	.057
Clutter (B)	38.2 11.2	31.8 9.1	35.4 10.7	n/a	3.5	1	.069
Excessive Acquisition (B)	32.1 14.6	26.3 9.2	29.9 12.9	n/a	1.2	1	.268
OCD	Mean SD	Mean SD	Mean SD	Mean SD	F	df	p
(A)	n/a	13.5 9.9	n/a	13.9 9.84	0.0	1	.893
(B)	n/a	23.0 12.5	n/a	19.7 9.86	0.7	1	.405

(A) Onset of initial symptoms (even if non-impairing). (B) Onset of clinically significant, impairing symptoms. HD: hoarding disorder; OCD: obsessive–compulsive disorder.

which were significantly higher than those of the non-control group (Table 3).

3.3. Age of onset of hoarding and OCD symptoms

The two hoarding groups did not differ in terms of age of onset of the three defining symptoms of hoarding: difficulty discarding, clutter and excessive acquisition, with a mean initial onset at ages 15.9 years, 18 years and 21 years, respectively; and the onset of clinically significant symptoms at 32 years, 35.5 years, and 29.9 years, respectively (Table 4). There was a non-significant trend for hoarders with OCD to experience clinically significant difficulty discarding at an earlier age (F = 3.89, df = 1, p = .057, Cohen's d = .65). Regarding the age of onset of OCD symptoms, there were no sta-

Table 5
Experience of traumatic life events according to the Trauma History Questionnaire.

	Hoarding groups			Non-hoarding groups		Statistics		
	HD (n = 24)	HD + OCD (n = 20)	Combined (n = 44)	OCD (n = 17)	Control (n = 20)			
TLEs	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	F	df	p
Total no. of TLEs	7.7 4.5	5.6 3.3	6.7 4.1	3.5 2.3	3.9 3.3	6.9	2	.002
Crime-related events	2.0 1.4	1.5 1.1	1.7 1.2	1.0 1.0	1.3 1.3	2.6	3	.076
Disaster-related events	3.8 2.4	2.5 1.6	n/a	1.4 1.3	1.8 1.5	6.7	2	<0.001
Physical/sexual experiences	1.3 1.5	.8 1.1	1.0 1.3	.6 1.0	.5 .8	1.8	2	.165
	% *N*	% *N*	% *N*	% *N*	% *N*	χ^2	df	p
Distressing memory in childhood of possession thrown away	45.5 10	30.0 6	38.1 16	5.9 1	n/a	6.1	1	.013

TLE: traumatic life event; HD: hoarding disorder; OCD: obsessive–compulsive disorder.

tistically significant differences between the two OCD groups (i.e., HD + OCD and OCD).

3.4. Experience of traumatic life events (TLEs)

On the THQ, hoarders (HD and HD + OCD combined) reported experiencing a significantly greater number of TLEs compared to either non-hoarding OCD or non-clinical control group participants (all p values < .05; Cohen's d = 0.73–0.85) (Table 5). An analysis of covariance (ANCOVA) found that these group differences remained statistically significant when controlling for age, education, gender, BDI & OCI-R scores (all p values < .05).

Both hoarding groups tended to display a greater number TLEs on all the sub-domains of the THQ, although the difference only reached statistical significance for disaster-related events. Particularly, hoarders without OCD were significantly more likely to report such experiences compared to the remaining groups (all p values < .05; Cohen's d = 0.96–1.13).

In an unplanned exploration based on initial observations during the interview phase, participants (excluding the non-clinical controls) were asked if they were able to recall a time during childhood when someone had discarded a personal possession against their will which they regarded as a severely distressing experience. We found that hoarders (HD and HD + OCD combined) were significantly more likely to recall such an experience compared with non-hoarding OCD participants (χ^2 = 6.12, df = 1, exact p = .013) (Table 5).

3.5. Correlational analyses

Spearman's rho using data from the whole clinical sample (n = 60) revealed significant positive correlations between all of the hoarding measures (SI-R, OCI-R and DY-BOCS) and the number of TLEs (Table 6), although the strength of this relationship was moderate (r's < .5). By contrast, the correlations between measures of OCD severity (after exclusion of hoarding items) and the number of TLEs were weak and non-significant (OCI-R) or even negatively correlated (Global DY-BOCS score).

3.6. Temporal relation between stressful life events and onset of hoarding symptoms

There were no significant differences between the HD and HD + OCD groups in terms of the relationship between stressful life events and the onset of either initial, or clinically significant hoarding symptoms, based on the categories derived from the semi-structured interview and time-line charts (all p values > 0.05). In both groups combined, the initial onset of hoarding symptoms (i.e., when the first sign of hoarding behavior started to emerge) was linked to a specific stressful life event in 20.5% of hoarding participants, whereas 31.8% linked the initial onset to more chronic, ongoing environmental factors. On the other hand, 45.5% of hoarding participants identified no link at all between the onset of symptoms and any particular life events or situation. Regarding the development of hoarding into a significant problem, 13.6% of hoarders linked it to a specific stressful life event, 15.9% to ongoing life stressors, 31.8% to 'neutral' circumstantial life factors, and 38.6% identified no relation between the development of hoarding as a significant problem and any particular life event or situation (Table 7).

When the hoarding sample was split according to age of onset, those who reported the initial emergence of hoarding behaviors in early childhood – i.e., between age 0 and 10 (n = 20) – were significantly less likely to link the onset of initial hoarding symptoms to a specific stressful life event: none reported such a link, compared to 37.5% of hoarders with a later age of onset (χ^2 = 9.429, df = 1, exact p = .002).

Table 6
Spearman's rho (two-tailed) correlation between number of traumatic life events and severity of hoarding and obsessive–compulsive symptoms.

	SI-R total	OCI-R Hoarding subscale	DY-BOCS Hoarding subscale	OCI-R total minus hoarding subscale	Global DY-BOCS minus hoarding
Number of TLEs	.39**	.33**	.30*	−.16	−.26*

TLE: traumatic life event; SI-R: Saving Inventory Revised; OCI-R: Obsessive Compulsive Inventory Revised; DY-BOCS: Dimensional Yale Brown Obsessive Compulsive Scale; HD: hoarding disorder; OCD: obsessive–compulsive Disorder.
** Correlation is significant at the 0.01 level (two-tailed).
* Correlation is significant at the 0.05 level (two-tailed).

Table 7
Temporal relation between stressful life events and hoarding and OCD.

	Hoarding groups		Non-hoarding group		Statistics		
	HD (n = 24)	HD + OCD (n = 20)	Combined (n = 43)	OCD (n = 17)			
Hoarding	% *N*	% *N*	% *N*	% *N*	χ^2	df	*p*
Onset A in childhood (0-10 years)	45.8 11	45.0 9	45.4 20	n/a	.00	1	.956
Onset A linked to TLE	16.7 4	25.0 5	20.5 9	n/a	.47	1	.710
Onset B linked to TLE	16.7 4	10.0 2	13.6 6	n/a	.41	1	.673
Onset A linked to ongoing stressful factors	37.5 9	25.0 5	31.8 14	n/a	.79	1	.375
Onset B linked to ongoing stressful factors	16.7 4	15.0 3	15.9 7	n/a	.02	1	1.000
Onset A not linked to any environmental factor	41.7 10	50.0 10	45.5 20	n/a	.31	1	.762
Onset B not linked to any environmental factor	29.2 7	50.0 10	38.6 17	n/a	2.00	1	.158
Link to neutral life circumstances	37.5 9	25.0 5	31.8 14	n/a	.79	1	.375
OCD	% *N*	% *N*	% *N*	% *N*	χ^2	df	*p*
Onset A in childhood (0-10 years)	n/a	40.0 8	n/a	35.3 6	.87	1	.769
Onset A linked to TLE	n/a	10.0 2	n/a	11.8 2	.03	1	1.00
Onset B linked to TLE	n/a	20.0 4	n/a	17.6 3	.03	1	1.000
Onset A linked to ongoing stressful factors	n/a	20.0 4	n/a	17.6 3	.03	1	1.000
Onset B linked to ongoing stressful factors	n/a	25.0 5	n/a	23.5 4	.01	1	1.000
Onset A not linked to any environmental factor	n/a	50.0 10	n/a	70.6 12	1.62	1	.204
Onset B not linked to any environmental factor	n/a	45.0 9	n/a	47.1 8	.016	1	.900
Link to neutral life circumstances	n/a	0 0	n/a	11.8 2	2.49	1	.204

(A) Onset of initial symptoms (sub-clinical). (B) Onset of clinically significant symptoms. TLE: traumatic life event; HD: hoarding disorder; OCD: obsessive–compulsive disorder.

3.7. Temporal relation between traumatic/stressful life events and onset of obsessive–compulsive symptoms

Among the participants with OCD, 10.8% linked the initial onset of OCD symptoms to a specific stressful life event, 18.9% to more chronic, ongoing environmental factors, and 59.5% identified no link between the onset of symptoms and any particular life event or situation. As for the development of OCD into a significant problem, 18.9% of OCD participants linked it to a specific stressful life event, 24.3% to ongoing life factors, 5.4% to change in life circumstances, and 45.9% identified no link between the worsening of OCD symptoms and any particular life event or situation (Table 7). No significant differences were found after grouping the OCD sample according to childhood vs. later onset (all p values > 0.05).

3.8. Material deprivation

The two hoarding groups did not differ significantly with regard to level of material deprivation (all p values > 0.05). Although a greater proportion of hoarders reported experiencing a lack of money, food, shelter, and clothing compared to non-hoarding OCD participants and non-clinical controls, these differences were not statistically significant (all p values > .05). There were also no significant group differences between general and relative levels of material well-being in childhood (i.e., hoarders were as likely to report having had an impoverished or materially comfortable childhood as non-hoarding participants; Table 8). Descriptions of 'general' versus 'relative' levels of childhood affluence were also similar, with 65.8% of the total sample reporting an 'average' childhood in terms of material possessions generally and 62% reporting average levels of material well-being relative to their peers.

4. Discussion

Results of this study should help elucidate some of the key features and risk factors associated with hoarding disorder, with a focus on the role of traumatic/stressful life events and material deprivation. Uniquely, the design enabled a comparison between two separate groups of hoarding participants (defined by the presence or absence of comorbid OCD) as well as between hoarders, non-hoarding OCD participants, and a non-clinical control group.

4.1. Prevalence of TLEs

Participants with HD reported experiencing a significantly greater number of traumatic life events than either OCD participants without hoarding symptoms and non-clinical controls, even after controlling for age, gender, level of education, depression, and obsessive–compulsive symptoms. Furthermore, the severity of hoarding symptoms as assessed by three separate measures of hoarding (SI-R total, DY-BOCS, and OCI-R hoarding items) was positively correlated to the frequency of traumatic life events.

Table 8
Experience of material deprivation.

	Hoarding groups			Non-hoarding groups		Statistics		
	HD (n = 23)	HD + OCD (n = 20)	Combined (n = 43)	OCD (n = 17)	Control (n = 20)			
	% *N*	% *N*	% *N*	% *N*	% *N*	χ^2	df	*p*
Lack of money	87.0 20	65.0 13	76.7 33	58.8 10	70.0 14	1.9	2	.364
Lack of food	30.4 7	25.0 5	27.9 12	5.9 1	15.0 3	4.1	2	.139
Lack of shelter	21.7 5	15.0 3	18.6 8	0 0	5.0 1	5.2	2	.091
Lack of clothing	34.8 8	10.0 2	23.2 10	11.8 2	10.0 2	2.1	2	.450
	Mean SD	Mean SD	Mean SD	Mean SD	Mean SD	χ^2	df	*p*
Total material deprivation	1.7 1.2	1.1 1.1	1.4 1.2	.7 .8	1.0 1.0	5.6	2	.061
Material level in childhood—general	2.9 .6	3.0 .8	2.9 .7	3.0 .5	3.2 .77	1.5	2	.469
Material level in childhood—relative	2.7 .8	2.7 .8	2.7 .8	2.8 .3	2.9 .6	1.3	2	.505

HD: hoarding disorder; OCD: obsessive–compulsive disorder.

By contrast, the severity of obsessive–compulsive symptoms was generally unrelated, or negatively correlated, with a history of traumatic experiences. These findings are consistent with previous research (Cromer et al., 2007; Hartl et al., 2005), extending it and strengthening the evidence of an association between hoarding and exposure to trauma. The fact that the two hoarding groups did not differ significantly in terms of trauma frequency suggests that the presence comorbid OCD bears no impact on the relation between trauma and hoarding.

Further exploration of particular domains of traumatic life events found that both hoarding groups tended to display a greater number of TLEs on all the sub-domains of the THQ, although the difference only reached statistical significance for disaster and general trauma-related events (including natural or man-made disasters and actual or feared injury/illness/death of self or others). Particularly, hoarders without OCD were significantly more likely to report such experiences than the remaining groups. We attribute the lack of significant differences on some of these domains to limited statistical power. The process through which TLEs may contribute to the onset and development of HD is unclear. One possibility is that such events lead individuals to perceive the world as unpredictable and uncontrollable, predisposing them to seek comfort and security in personal possessions through which they may exert some degree of control (Hartl et al., 2005).

Interestingly, despite a higher incidence of TLEs in patients with HD, rates of comorbid PTSD were no more frequent in the hoarding compared to the non-hoarding groups, with less than 5% of the hoarding sample meeting diagnostic criteria. This proportion is lower than the 23% comorbidity rate reported in the study by Hartl et al. (2005), but it suggests that despite experiencing a range of traumatic life events, a full blown presentation of PTSD among hoarders may be relatively uncommon. Studies with larger samples of patients are required to confirm this.

In an unplanned line of inquiry, hoarders appeared more likely than non-hoarding OCD participants to report having had a personal possession discarded by someone else (typically a close family member) against their will, and having been severely distressed by the experience. This further supports the notion that perceived lack of control over one's environment (including one's personal possessions) may underlie hoarding behavior (Frost & Hartl, 1996). Although not explicitly assessed, some hoarders reported feeling a lack of privacy during childhood or sense of ownership over their possessions, which also seems to highlight issues relating to a lack of control. The direction of this relation is unclear: it could be that such an experience leads an individual to hoard their possessions; or, conversely, having a prior propensity towards hoarding may lead to more extreme emotional reactions in response to what may be quite a common occurrence in childhood (i.e., parents clearing and tidying areas occupied by their children), thus enhancing the formation of more salient and vivid memories. As this particular question was not planned at the outset, the method of data collection was less rigorous, especially in the early stages of the study. Although only limited conclusions can be drawn, it raises interesting questions regarding the role of privacy, and the degree of control over personal possessions in childhood. These findings also seem to be consistent with previous research suggesting that the onset and worsening of hoarding symptoms may be related to traumatic experiences involving the loss of possessions – e.g., a fire or a threat of eviction (Grisham et al., 2006) – or causing insecurity such as home break-ins (Samuels et al., 2008).

4.2. Temporal relation between TLEs and symptom onset

This study also explored in detail the temporal relation between the experience of stressful life events and the onset of: (a) initial; and (b) clinically significant hoarding symptoms. A significant proportion of hoarders (just over 50%), made a link between initial symptoms and stressful life circumstances, the nature of these varying between specific traumatic events to more long-term negative environmental factors (e.g., general negative parenting style, relationship difficulties). However, it was just as likely that the initial onset of symptoms occurred in the absence of any apparent environmental trigger. By contrast, fewer than 1 in 10 participants with OCD (both with and without hoarding problems) linked the initial onset of OCD symptoms with a particular life stressor, whereas nearly 60% reported no link with any environmental factor. This tentatively suggests that specific stressful life events may play a greater role in triggering the onset of hoarding as compared to OCD symptoms.

With regard to onset of clinically significant hoarding (i.e., when symptoms began to severely impact on daily functioning), the majority of hoarders linked this to some kind of environmen-

tal factor, although for many this was more due to 'neutral' life circumstances (such as living alone, moving to a smaller home, inheriting deceased parents' possessions, or becoming settled in one place) rather than something considered explicitly traumatic in nature. It is interesting to note that far fewer individuals with OCD (less than 6%) attributed the onset of clinically significant obsessive–compulsive symptoms to such life circumstances. This perhaps reflects how practical and physical considerations more strongly influence the development of problematic hoarding as compared to OCD.

An interesting trend emerged when the sample was split according to age of onset: those who reported an early age of onset (i.e., noticing the first signs of hoarding behaviors before the age of 10) were significantly less likely to identify a specific stressful life event as triggering initial hoarding symptoms. This is consistent with the study by Grisham et al. (2006), which found that individuals reporting a stressful event when hoarding behavior started had a significantly later age of onset than those reporting no such event. It is possible that individuals reporting a childhood onset of hoarding may simply be less able to recall specific environmental triggers from such a young age. These findings will therefore require confirmation employing a longitudinal design but, if replicated, they could be indicative of a heterogeneous course of hoarding disorder, in which some individuals are more strongly predisposed to hoarding, with symptoms manifesting at an earlier age, in the apparent absence of a particular environmental stressor. Indeed, many hoarders in this particular subset reported having always had a tendency to hold onto personal possessions for as long as they could remember. By contrast, those with a later onset of hoarding disorder may develop symptoms in reaction to particular adverse life events or situations.

4.3. Material deprivation

Consistent with previous research (Frost & Gross, 1993), hoarders were no more likely than non-hoarders to report having experienced a lack of money, food, adequate clothing, or shelter during their lifetime. Indeed, a majority of respondents in all four comparison groups reported a lack of money at some point over their lives, which clearly indicates that a shortage of money is not a specific vulnerability factor for hoarding. Nearly 1 in 5 hoarders experienced a lack of adequate shelter over their life (due to circumstances ranging from eviction and homelessness to living in substandard accommodation), compared to none of the non-hoarding OCD participants and 5% of non-clinical controls. Although not statistically significant, this may be a clinically interesting finding. A recent study found that 8–12% of a large sample of hoarders had been evicted or threatened with eviction due to hoarding at some point in their lives (Tolin, Frost, Steketee, Gray, & Fitch, 2008). What is striking about this particular form of material deprivation – in contrast to the other indices measured (money, food and clothing) – is the theme of loss, often sudden, that seemed to accompany the experience. Losing one's home, or being without a place one can call 'home', would likely be accompanied by a sense of loss and lack of control over the environment. Individuals may then turn towards their possessions as sources of security and comfort, particularly once they have then resettled somewhere and established a 'safe haven'. The sample of hoarders in this study did not include any recent immigrants or refugees: further research targeting this population (particularly those who had been forced to flee their homes) may provide more insight into this link.

It was also observed that types of specific stressful life events linked to the onset and development of hoarding symptoms tended to relate to themes of loss, such as death of a close family member, end of a relationship, divorce, eviction, redundancy, being made homeless and an ex-spouse kidnapping a child. In line with Frost and Hartl's model of hoarding (1996), this suggests that an individual's sense of safety and security may be compromised following a significant loss, which may lead an individual to regain a sense of comfort and control through saving and acquiring personal items. Further exploration of the association between experiences of loss and the development of hoarding is warranted.

No particular relation was found between levels of material affluence in childhood and hoarding. The majority of participants in all four comparison groups reported 'average' levels of material affluence, both generally and relative to their peers. There is therefore little evidence to suggest that hoarders experience a greater degree of poverty during childhood than non-hoarders.

Overall, these findings do not provide compelling evidence of an association between material deprivation and hoarding. The idea that hoarders attach great emotional significance to possessions as a consequence of material impoverishment is perhaps intuitive, but appears to be unfounded. A more fruitful line of research may be to explore the role of emotional deprivation and hoarding (i.e., the saving of possessions as compensation for a sense of lack arising from the absence of a nurturing upbringing in childhood, and experience of poor interpersonal relationships. Indeed, Alonso et al. (2004) found that hoarding symptoms were the only clinical dimension of OCD that could be partially predicted by perceived parental traits, particularly low emotional warmth. Steketee, Frost, and Kyrios (2003) point to a possible link between emotional attachment to possessions and poor parental attachment relationships in childhood, although there is limited research in this area to date (e.g., Nedelisky & Steele, 2009) and is confounded by the study of hoarding in the context of OCD.

4.4. Limitations

Some limitations should be considered when interpreting the results of this study. First, despite our efforts to facilitate recall by using a detailed timeline of events, a reliance on retrospective self-report raises the possibility of data inaccuracies due to memory bias, lack of insight, or unwillingness to disclose past experiences. Longitudinal studies are required to overcome such limitations. Second, although this study benefitted from well-characterized groups of patients, the sample sizes were relatively small and some analyses may have been underpowered, particularly regarding the specific types of TLEs. Larger scale studies in the future are required to confirm the findings and further explore non-significant trends. Third, the non-clinical control group was not well matched with regard to some potentially important sociodemographic characteristics, such as level of education. However, the key psychiatric control group (OCD) was reasonably well matched to the two hoarding groups.

5. Conclusions

With the above caveats in mind, our results suggest that stressful life experiences may play an important role in hoarding disorder, at least for some individuals, and that the link between trauma and hoarding seems to be independent from the presence or absence of a diagnosis of OCD. An exploration of previous life stressors (particularly loss-related) may be important in the development of an individual psychological formulation to guide treatment for hoarding disorder. The contrasting pattern of association between traumatic life events and OCD further supports the conceptualization of hoarding disorder as a separate diagnostic entity from OCD. No clear link was found between levels of material deprivation and hoarding, although the themes of 'loss' and 'lack' in the context of *emotional deprivation* may offer a more fruitful line for further research. The current results await confirmation in a repre-

sentative epidemiological sample and ideally using a longitudinal design.

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