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RUNNING HEAD: Defeat, Entrapment, Caregiver Burden and Depression

The Prospective Role of Defeat and Entrapment in Caregiver Burden and Depression
Amongst Formal Caregivers.

Alys Wyn Griffiths¹, Alex M. Wood²³ and Sara Tai²

¹School of Health and Community Studies, Faculty of Health and Social Sciences
Leeds Beckett University, City Campus, Leeds, LS1 3HE

²School of Psychological Sciences, University of Manchester, Oxford Road,
Manchester, M13 9PL

³Behavioural Science Centre, Stirling Management School, University of Stirling,
Stirling, FK9 4LA

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Correspondence concerning this article should be sent to: Alys Griffiths, School of Health and Community Studies, Faculty of Health and Social Sciences Leeds Beckett University, City Campus, Leeds, LS1 3HE. Tel: +44 (0)113 812 9238. Email: alys.griffiths@leedsbeckett.ac.uk

Abstract

The mental and physical demands of working in a care home are known to lead to elevated risk for staff of work and stress related illnesses such as depression. However, little is known about how these develop. Recent developments in defeat and entrapment research have demonstrated that they are best conceptualised as a single factor. Our aim was to establish whether combined defeat and entrapment influences the development of depression and caregiver burden amongst health care staff. Formal care staff (N = 195) were recruited from a care organisation and completed self-report measures of caregiver burden, depression, defeat and entrapment at two time points approximately 12 months apart. Regression analyses demonstrated that changes in caregiver burden and depression between Time 1 and Time 2 were predicted from baseline levels of combined defeat and entrapment. This research provided the first evidence of a link between defeat, entrapment and caregiver burden and depression in care staff. There are implications for improving education and training within care organisations about caregiver burden to help identify individuals at risk of developing illnesses.

Key words: defeat; entrapment; depression; burden; care staff

The Prospective Role of Defeat and Entrapment in Caregiver Burden and Depression amongst Formal Caregivers.

As the proportion of adults within the population aged 65 and over continues to rise and more individuals become susceptible to age-related disorders, the demand for family and formal (employed) caregivers to provide care is also increasing (Pitfield et al., 2011). Whilst the burden of caring for family members is well established (see Adelman et al., 2014 for a review), much less is known about the burden for formal caregivers (Cocco et al., 2003; Duffy et al., 2009) and how this affects well-being. This paper provides an exploration of the role of a psychological factor, combined defeat and entrapment (Gilbert & Allan, 1998), in the experience of caregiver burden and depression amongst formal caregivers.

Working in care homes is mentally and physically demanding, with staff experiencing elevated risk of depression (Maslach & Jackson, 1986; Testad et al., 2010). Formal caregivers prioritize the well-being of their residents over their own (Crout et al., 2005), however many appear physically and emotionally exhausted in work (e.g. 68.6%, Duffy et al., 2009). Subsequently, these individuals experience caregiver burden, defined as poor physical and emotional health resulting from excessive caregiving demands (Given et al., 1992), or feelings of emotional exhaustion, depersonalized treatment of clients and reduced sense of personal accomplishment within the workplace (Maslach & Jackson, 1986). As burnout and caregiver burden are associated with negative experiences for both the staff and residents in care homes (Moniz-Cook et al., 1997), targeting and reducing caregiver burden should be a priority (Åström et al., 1991). However, the prevalence of burden is yet to be established (Albers et al., 2014). This is particularly relevant as high levels of caregiver burden may have an impact on staff turnover, which in turn has a negative impact on the

quality of care provided (Castle & Engberg, 2005). As increasing numbers of individuals live in care homes, understanding the support care staff require to optimally carry out their role is vital (Albers et al., 2014).

A systematic review of care staff demonstrated that the risk for developing caregiver burden or burnout ranged from 5% to 36% (Pitfield et al., 2011). However, this review only included cross-sectional studies and individuals with enduring psychological stress may terminate their employment (Pitfield et al., 2011). Supporting this, individuals with high stress levels felt less committed to their job and were more likely to terminate their employment (Duffy et al., 2009). Conversely, almost 65% of nurses and psychologists working in dementia care reported moderate to high levels of burnout (Todd & Watts, 2005). Amongst these individuals, almost 70% also reported experiencing emotional exhaustion due to their role (Duffy et al., 2009) and almost 37% of nursing home staff reported impaired mental well-being (Pelissier et al., 2015). Due to conflicting research evidence, prospective research to establish levels of psychological distress amongst individuals working in the care sector has been recommended (Pitfield et al., 2011).

The role of stress, defined as a "relationship between the person and the environment that is appraised by the person as taxing or exceeding his/her resources and endangering his/her well-being" (Lazarus & Folkman, 1984, pp.21), has been well established for individuals working in care homes. Such individuals often experience stress (Hazelhof et al., 2016), which may result from challenging behaviours and interactions with residents they work with (McVicar, 2003). Recently, it has been identified that antecedents such as communication problems, arguing with residents and limited experience in the role have a direct influence on stress, which in turn impact on job dissatisfaction, experience of burnout and absence from work (Hazelhof

et al., 2016), supporting theories that stress associated with professional caring roles may have health consequences (Chappell & Novak, 1994).

Two factors specifically associated with stress and psychological distress that may be particularly relevant to care staff, are defeat and entrapment. Defeat has been defined as failing to achieve important goals and experiencing a loss in social rank, and entrapment has been defined as a lack of available options for escape from an aversive situation (Gilbert & Allan, 1998). Entrapment, in particular, is associated with situations of chronic stress (Brown et al., 1995). Defeat and entrapment are thought to represent low social rank and therefore may lead to increased feelings of anxiety and lower positive affect (Gilbert, et al., 2002). Defeat and entrapment are associated with the development and maintenance of mental health problems amongst clinical and non-clinical populations (see Taylor et al., 2011 for a review) and may operate transdiagnostically. This coincides with a shift in mental health practice and research from the diagnosis and treatment of individual disorders to using treatments to enhance overall well-being (Kinderman et al., 2013).

Within defeat and entrapment research, there has been discussion over whether they are best defined as a single construct. This was first identified as definitions of defeat include suggestions of a lack of available solutions, which is strongly associated with entrapment (Rooke & Birchwood, 1998). Although initially viewed as separate concepts, recent theory and research has conceptualised defeat and entrapment as a single construct encompassing feelings of failure without any escape routes (e.g., Taylor et al., 2009), or as subfacets within a higher order construct termed involuntary subordination (Sturman, 2011). Within this construct, it is thought that the acceptance of defeating and entrapping situations is crucial in whether they become prolonged and manifest in depressive symptoms (Sturman et al., 2015). Taylor and colleagues (2011)

suggested that following an aversive event, defeat and entrapment form a self-reinforcing mechanism whereby the experience of one influences the other continuously, leading them to co-occur to such an extent that they cannot be separated. Additionally, Johnson and colleagues (2008) suggested that defeat and entrapment involve identical themes representing a biased appraisal of an aversive situation and a lack of escape options. Furthermore, Sturman (2011) proposed that defeat and entrapment are overlapping subfacets of the perception of involuntary subordination. Furthermore, factor analysis on the *Defeat Scale* and *Entrapment Scale* (Gilbert & Allan, 1998) has consistently shown that a single structure underlies the items (e.g. Griffiths et al., 2014; Griffiths et al., 2015; Taylor et al., 2009). Defeat and entrapment also consistently correlate at above .80, considered too high to be included in analyses as independent variables (Tabachnick & Fidell, 2007).

Although the link between defeat, entrapment and mental health is well established, limited research has considered this amongst caregivers. In a study of informal caregivers of individuals with dementia, entrapment was highly related to symptoms of depression, thought to result from caregiving stress (Martin et al., 2006). However, no relationship was found between stress and depression when controlling for defeat and entrapment. The constant demands of caring, combined with inescapable stressors, were key factors in depression (Martin et al., 2006). Research should now consider formal caregiving settings, where individuals may feel trapped in situations of chronic high stress. Despite evidence that caregiver morale may increase over time (Gilhooly, 1984), for some, the burden of caring may become increasingly entrapping and depressing (Martin et al., 2006). Prospective research with large samples that could indicate risk factors that predict the experience of caregiver burden is a priority (Martin et al., 2006; Pitfield et al., 2011) to develop strategies to address these risk factors.

Studies considering risk factors for mental health problems have shown that defeat and entrapment are a “generative mechanism”, suggesting that whilst risk factors may appear to predict mental health problems, the “active” part of the risk factor is the variance shared with defeat and entrapment. Whilst both a risk factor and defeat and entrapment may individually predict a psychopathological outcome, when outcomes are simultaneously regressed on both risk factor and defeat and entrapment, only defeat and entrapment remains significant. For example, the relationship between stress and depression was mediated by defeat and entrapment for individuals providing care for individuals with learning disabilities (Willner & Goldstein, 2001). We expect that, longitudinally, both depression and combined defeat and entrapment will be predictors of caregiver burden, but that only defeat and entrapment will be a significant predictor when controlling for overlapping variance between the constructs.

In the current study, we provided the first exploration of the influence of defeat and entrapment on caregiver burden and depression for formal caregivers across twelve months. We predicted that participants who experience high levels of defeat and entrapment would report higher levels of caregiver burden and depression twelve months later. We also predicted that depression and caregiver burden would correlate, however that the relationship would operate through shared variance between depression and combined defeat and entrapment. This is a test of defeat and entrapment confounding the relationship between depression and caregiver burden; were mediation predicted, the same test would be used, but with the additional assumption that a causal relationship exists between the factors, which is not claimed here (MacKinnon et al., 2000).

Method

Participants and Procedure

One hundred and ninety five formal caregivers (age range 18 - 71 years; $M = 38.4$ years, $SD = 12.20$; see Table 1 for demographic characteristics) were recruited through advertisements placed in seven care homes forming a care organisation in North Wales, recruited on an opportunistic basis, through postal invitations to participate in research. Formal caregivers in this organisation provide care for individuals with dementia, neurological problems, and older adults who require nursing or residential care. Individuals rotate their shifts around the seven care homes, working with residents with different levels of need and severity of symptoms. Average hourly rate for a care assistant within the organisation was £6.30 and average rate for a senior care assistant was £7.50. The average weekly earnings for care assistants (£226.80) and senior care assistants (£270) was considerably lower than the average earnings for full time employees (£528), placing them within the lowest 10% of earners (Office for National Statistics, 2015). At Time 1, participants had been employed by the organisation for between 1 month and 21 years ($M = 4.3$ years, $SD = 4.32$). Only staff, not relatives of residents, were eligible to participate, as relatives generally spend a much smaller amount of time with older people in care homes and are not the primary care providers. The results would be confounded by the addition of a second population with limited stability in time spent with residents.

INSERT TABLE 1

Participants completed self-report measures of defeat and entrapment, depression and caregiver burden at two points approximately 12 months apart. All participants completed the measures in the same order at both time points. Participants who did not return their questionnaires within one month at T2 were contacted up to three times before exclusion. Of the 195 participants, 128 also completed the measures

at T2, providing a 66% retention rate (see Figure 1). This low retention rate was anticipated due to high staff turnover rate within the care sector (Centre for Workforce Intelligence, 2013). To ensure that attrition did not affect the results, we conducted intention to treat analysis.

INSERT FIGURE 1

Missing value analysis was conducted to establish if any patterns existed within missing data for participants who had completed measures at both time points. The Missing Completely At Random test (MCAR; Little, 1998) was non-significant, indicating that there was no pattern to the missing data (e.g, individuals with higher depression scores did not have more missing data). Missing data was dealt with using multiple imputation (Rubin, 1987), which creates complete data sets by generating several possible values for any missing values. Analyses are then conducted across all of these data sets and outputs provide estimates for each data set about the results that would have been expected if there had been no missing values in the original data set (Allison, 2000). In the current study, the Markov Chain Monte Carlo algorithm was used (Zhang, 2003).

Measures

Defeat was measured using the *Defeat Scale* (Gilbert and Allan, 1998), consisting of 16 questions that assess individuals' perceptions of loss of rank position and failed struggles during the past week (e.g., "I feel defeated by life"). Items are rated on a five-point Likert scale, with higher scores indicating more perceptions of defeat. Scores on this scale have concurrent validity with submissive behaviour ($r = .35$) and hopelessness when controlling for depression ($r = .35$; Gilbert and Allan, 1998).

Entrapment was measured using the *Entrapment Scale* (Gilbert and Allan, 1998), consisting of 16 questions assessing individuals' motivation to escape from situations (e.g., "I am in a situation I feel trapped in"). Items are rated on a five-point Likert scale, with higher scores indicating more perceptions of entrapment. Scores on this scale have concurrent validity with submissive behaviour ($r = .34$) and hopelessness ($r = .65$; Gilbert and Allan, 1998). In the present study, an overall composite score was calculated for defeat and entrapment. This is consistent with demonstrations that defeat and entrapment are best defined as a single factor (Taylor et al., 2009) and subsequent research that has calculated an overall defeat and entrapment score, using either exploratory or confirmatory factor analysis to demonstrate that a single construct underlies defeat and entrapment (e.g. Griffiths et al., 2014; Griffiths et al., 2015; Taylor et al., 2010). Furthermore, scores on the *Defeat Scale* correlated with scores on *Entrapment Scale* at $r = .81$, suggesting that the constructs are too conceptually similar to be measured separately ($> .80$; Tabachnick & Fidell, 2007). The internal consistency of the composite score was $\alpha = .96$ at Time 1 and $\alpha = .96$ at Time 2, which exceeds the standard value for adequate levels of internal consistency ($> .70$; Nunnally, 1978).

Caregiver burden was assessed using the Zarit Burden Interview (ZBI; Zarit, Reever, & Bach-Peterson, 1980). Following the guidelines of Zarit and colleagues (1980), 'relative' was substituted for 'resident' to make the items applicable to formal caregivers. The measure consists of 22 items measured on a 5-point scale assessing perceived stresses experienced by caregivers and the impact this has on their lives. The scale is thought to be the most widely used measure of caregiver burden (Bachner & O'Rourke, 2007), and items in the scale measure the health and psychological well-being of the caregiver, as well as the relationship between the caregiver and their

residents. Furthermore, the original scale has been used alongside the CES-D and the two scores were shown to correlate, but not have multicollinearity issues ($R^2 = .57$; Hérbert et al., 2000). Scores of 13.5 on the ZBI have been used to represent a clinical threshold for burden quantified against a depression measure (Gaugler et al., 2009). In the present study, the internal consistency of this scale was $\alpha = .84$ at Time 1 and $\alpha = .80$ at Time 2, exceeding the value for adequate levels of internal consistency ($>.70$; Nunnally, 1978).

Depression was measured using the *Center for Epidemiologic Studies Depression Scale* (CES-D; Radloff, 1977), a 20-item scale. This measure is designed to measure symptoms associated with depression amongst non-clinical samples. It measures a full continuum from good to poor functioning and is particularly suitable for community administration (Wood et al., 2010). Participants rate their feelings during the past week (e.g., “I felt sad”). The maximum score on the scale is 60; scores of 16-26 represent mild depression and scores of 27 and above represent major depression. Scores on this scale have high sensitivity (92%) and specificity (87%) to clinical assessment of mild depression through clinician interview using a cut-off of 21 (Lyness et al., 1997). In the present study, the internal consistency of this scale was measured as $\alpha = .97$ at Time 1 and $\alpha = .97$ at Time 2.

Results

Preliminary Analyses

To establish whether the data was normally distributed, a Kolmogorov-Smirnov test was conducted, which was significant for caregiver burden, combined defeat and entrapment, and depression ($p < .05$). This suggested that the data significantly deviated from normality at T1. Therefore, prior to analysis, a square root transformation was

performed to normalise data distribution. Following this transformation, a further Kolmogorov-Smirnov test was conducted, which was non-significant for all variables ($p > .05$).

To explore whether a composite score for defeat and entrapment was appropriate, a maximum-likelihood exploratory factor analysis (EFA) was conducted on the 32 items of both scales. This method is robust enough to moderate any deviation from normality. Bartlett's test of sphericity confirmed further that correlations between items were large enough for an EFA ($\chi^2 [496] = 4554.26, p < .001$). A Keiser-Meyer-Olkin (KMO) test indicated a participant: item ratio of 6:1, which exceeds an adequate number of participants (KMO = .936). The first ten initial eigenvalues (and % of variance accounted for) resulting from the EFA were 15.54 (48.58%), 1.60 (5.00%), 1.53 (4.78%), 1.25 (3.89%), 1.12 (3.51%), 1.06 (3.30%), .89 (2.78%), .77 (2.42%), .69 (2.15%), .66 (2.06%) and .62 (1.95%). Of the 32 items, 28 loaded on the first factor above the .40 cut off considered a reasonable loading on a factor (Velicer, Peacock, & Jackson, 1982) and only 1 item loaded above .40 on a second factor (see Table 2). Parallel analysis was conducted to establish how many factors should be extracted. Parallel analysis creates data sets with the same number of cases and variables as the actual dataset, filled with random numbers. An EFA is then performed on each data set, and any factors within the actual data set with eigenvalues that exceed those that emerge in 95% of the data sets of random numbers are defined as not having arisen due to chance variation within the data. A parallel analysis of 1,000 data sets using the 95% cutoff (O'Connor, 2000) was conducted. The first five of the simulated data sets were equal to or less than 1.85, 1.73, 1.64, 1.57 and 1.50. In the actual data set, only the first eigenvalue of 15.54 exceeded chance values, suggesting that one factor underlies the data.

Multicollinearity between caregiver burden and depression

Due to previous correlations between caregiver burden and depression, multicollinearity analysis was conducted. Multicollinearity occurs when high correlations exist between IVs ($> r = .80$) and can lead to misinterpretation of the effects of predictors (Tabachnick & Fidell, 2007). Caregiver burden and depression may develop concurrently and have previously demonstrated moderate correlations and shared variance of approximately 20% amongst health care staff (Iacovides et al., 1999). Firstly, correlation analysis was conducted to identify whether any correlations existed between the variables (see Table 2). To establish whether caregiver burden and depression could be included in analyses as distinct predictors, a multiple regression analysis was conducted on T1 data. This demonstrated a Variance Inflation Factor (VIF) of 1.15; considerably lower than 5, the value that represents that regression coefficients are poorly estimated due to multicollinearity (Montgomery, 2001). Both variables demonstrated tolerance values of .87, exceeding the minimum level of tolerance (Tabachnick & Fidell, 2007), which clarified that caregiver burden and depression could be included as distinct predictors in analyses.

Regression analyses

Prior to regression analyses being conducted, dummy regressor values were formulated for gender, ethnicity, and shift, as these were nominal. For gender and shift, one category was coded 1 and the other 0. For ethnicity, all categories were coded 1 with the exception of 'White British'.

Regression analyses were conducted to investigate whether defeat and entrapment predicted changes in depression and caregiver burden. Each analysis involved regressing the T2 score of the outcome variable (depression or caregiver burden) on its corresponding T1 score and the T1 combined defeat and entrapment

score ($N = 128$). This analysis predicts the residual change in the outcome variable between T1 and T2. We used this method rather than calculating change scores, which can be problematic when change between the average scores at baseline and subsequent time points varies between participants. This occurs as those with higher scores regress towards the mean score from the baseline time point, leading to misleading results (Hayes, 1988).

In the first analysis, we attempted to predict changes in caregiver burden from T1 combined defeat and entrapment, controlling for T1 caregiver burden. The basic model for caregiver burden was significant ($R^2 = .55$, $F(6, 112) = 50.26$, $p < .001$, $f^2 = .11$) with T1 caregiver burden being a predictor of T2 caregiver burden scores ($\beta = .55$, $t(112) = 7.14$, $p < .001$), demonstrating some stability of this variable over time. Critically T1 defeat and entrapment predicted changes in caregiver burden ($\beta = .30$, $t(112) = 3.27$, $p = .001$), whilst none of the demographic variables predicted changes in caregiver burden [age ($\beta = .08$, $t(112) = .89$, $p > .05$); gender ($\beta = .07$, $t(112) = .76$, $p > .05$); ethnicity ($\beta = .13$, $t(112) = 1.32$, $p > .05$); shift ($\beta = .06$, $t(112) = 3.27$, $p = .001$)].

In the second analysis, we attempted to predict changes in depression from T1 defeat and entrapment, controlling for T1 depression. The basic model for depression was also significant ($R^2 = .58$, $F(6, 104) = 8.74$, $p < .001$, $f^2 = .28$) with T1 depression scores predicting T2 depression scores ($\beta = .38$, $t(104) = 3.37$, $p < .001$), showing some stability of the construct over time. Importantly, T1 combined defeat and entrapment also predicted changes in depression ($\beta = .27$, $t(104) = 2.50$, $p = .01$), whilst none of the demographic variables predicted changes in depression scores [age ($\beta = .06$, $t(104) = .72$, $p > .05$); gender ($\beta = .07$, $t(104) = .83$, $p > .05$); ethnicity ($\beta = .03$, $t(104) = .39$, $p > .05$); shift ($\beta = .15$, $t(104) = 1.71$, $p > .09$)].

Combined defeat and entrapment as a confounding variable in the relationship between depression and caregiver burden

To test whether combined defeat and entrapment was a confounding variable in the relationship between depression and caregiver burden, the steps of Baron and Kenny (1986) were followed. A regression analysis was conducted to confirm that the predictive variable (depression) was associated with the outcome variable (caregiver burden). The basic model was significant ($R^2 = .53$, $F(1, 123) = 22.52$, $p < .001$, $f^2 = 1.12$) with T1 caregiver burden scores predicting T2 caregiver burden scores ($\beta = .48$, $t(123) = 5.82$, $p < .001$). Importantly, T1 depression significantly predicted changes in T2 caregiver burden ($\beta = .28$, $t(123) = 3.20$, $p = .002$). Secondly, a regression analysis was conducted to confirm that the predictive variable (depression) was associated with the potential confounding variable (combined defeat and entrapment). This demonstrated that T1 depression was significantly associated with combined T1 defeat and entrapment ($\beta = .70$, $t(123) = 13.50$, $p < .001$). Finally, a regression analysis was conducted to establish whether the predictive variable (depression) remained significantly associated with the outcome variable (caregiver burden), when the confounding variable (combined defeat and entrapment) was controlled for. A regression analysis demonstrated that when combined defeat and entrapment was controlled for, depression was no longer a significant predictor of changes in caregiver burden ($\beta = .12$, $t(123) = 1.10$, $p > .05$), whereas combined defeat and entrapment was a significant predictor of changes in caregiver burden ($\beta = .24$, $t(123) = 2.16$, $p < .05$). Additionally, the Sobel test was conducted (Sobel, 1982), which tests the significance of a confounding effect in a relationship, demonstrated that the path involving the confounding variable (implied by the diagram) was significant, that the relationship between depression and caregiver burden was significantly decreased when controlling

for defeat and entrapment (Sobel = 1.79, $p = .007$). The assumption of normality for the indirect effect sampling distribution was met in the current study. These analyses demonstrate that combined defeat and entrapment is a confounding variable in the relationship between depression and caregiver burden (see Figure 2).

INSERT FIGURE 2

Robustness check

Due to the high attrition rate (34%), regression analyses were conducted with a conservative assumption included, to ensure that drop out did not account for the results. The principles followed for this analysis were those of intention to treat analysis (ITT), which resolves issues associated with participant loss to follow-up and estimates results if all participants completed every time point of data collection (Hollis & Campbell, 1999). Whereas, withdrawal from research usually results in an individual being excluded from analysis, ITT allows imputation of predicted outcome values, based on an individual's previous scores, using the last available data point carried forward to any future points (Mazumdar et al., 1999). The conservative assumption is thus made that every participant who dropped out had no longitudinal relationships between the variables and they would have counted against the hypothesis. In the current study, T1 scores were inputted for T2. Regression analyses identical to those above were conducted to investigate whether combined defeat and entrapment predicted changes in depression and caregiver burden with the inclusion of the additional data for participants who dropped out.

The basic model for caregiver burden was significant ($R^2 = .48$, $F(2, 191) = 175.29$, $p < .001$) with T1 caregiver burden scores a significant predictor of T2 caregiver burden scores ($\beta = .70$, $t(192) = 13.24$, $p < .001$). Crucially, T1 defeat and

entrapment predicted changes in caregiver burden ($\beta = .31, t(193) = 5.37, p < .001$). The basic model for depression was also significant ($R^2 = .72, F(1, 192) = 102.66, p < .001$) with T1 depression scores remaining a significant predictor of T2 depression scores ($\beta = .57, t(191) = 8.18, p < .001$). Importantly, T1 defeat and entrapment significantly predicted changes in depression ($\beta = .19, t(191) = 2.75, p = < .001$). These analyses demonstrated that participant dropout did affect the results. We also re-ran the test of confounding with the same results; the Sobel test remained significant (Sobel = 6.37, $p < .001$).

Discussion

This study provided the first longitudinal evidence that combined defeat and entrapment impact on the mental health of people working in health care settings, demonstrating that perceptions of defeat and entrapment were associated with increased caregiver burden and depression twelve months later. Defeat and entrapment may be a key predictor of caregiver burden amongst staff as individuals may feel that they have invested too much to leave, despite low pay offs and high stress (Gilbert et al., 2004; Leahy, 2000).

This study demonstrated that depression and caregiver burden were significantly related, supporting evidence that there are similarities between the two constructs (Maslach & Jackson, 1986). However, combined defeat and entrapment confounded this relationship, as when this variable was controlled for, the original relationship did not remain significant. These results support the ‘depressogenic loop’ (Taylor et al., 2011), which purports that perceptions of defeat and entrapment influence the experience of the cognitive/affective symptoms of depression, such as feelings of inferiority. This suggests that defeat and entrapment may play a key role in the experience of depression amongst formal caregivers and could be used alongside more

established indicators to help identify those at risk of developing caregiver burden. The importance of early identification of psychological distress amongst care staff has been highlighted (Pelissier et al., 2015), and regularly screening staff for defeat and entrapment could improve early identification.

The current findings are particularly relevant within the care sector, where annual staff turnover rates are thought to be between 40% and 75% (Cohen-Mansfield, 1997). Additionally, staff are at elevated risk of developing stress and work related illnesses (Testad et al., 2010). Job insecurity, poor rates of pay and lack of recognition from superiors are risk factors for poor mental health (Pelissier et al., 2015). Furthermore, staff who have received the least education and training are at the highest risk of experiencing burden (Edvardsson et al., 2009). Training interventions have previously been shown to reduce burden, stress levels and staff turnover rates (McCabe et al., 2007), as well as promoting job satisfaction. Therefore, interventions should help to raise carers' awareness of defeat and entrapment and provide a normalising and supportive response. Furthermore, acknowledging defeat and entrapment as risk factors may help to identify individuals at increased vulnerability of experiencing burden, and reduce the physical and psychological hardship, for example, through supervision or peer supervision, to improve job related well-being (Pelissier et al., 2015; Willemse et al., 2014). Regular team meetings may help individuals broaden their perspectives and problem solving strategies, by discussing coping strategies with other more experienced team members. A randomized controlled trial should be conducted to test whether an intervention to decrease defeat and entrapment reduces depression and caregiver burden, which would provide justification for the inclusion of these constructs within therapeutic implementation. Additionally, future research could reexamine any existing interventions such as training interventions (e.g. McCabe et al.,

2007), to see whether defeat and entrapment are a mechanism of change. However, without robust evaluation of such interventions, these mechanisms should not be focused upon in a therapeutic manner.

There are two limitations with the present research. Although this research was longitudinal, outcomes were measured at two time-points. Longitudinal designs only show causality between variables A and B when there is covariation between A and B, A temporally precedes B, and other plausible explanations for the relationship have been rejected. In these circumstances “causality cannot be proven... but can be made plausible” (Cook & Campbell, 1979; Zapf et al., 1996, pp. 147). We are careful not to claim to provide causal evidence for the relationships studied. Instead, we interpret our results as demonstrating that perceptions of combined defeat and entrapment are associated with increased depression and caregiver burden. This relationship may result from shared variance with another variable, however even if the relationship operates indirectly our interpretations would not be altered. Future research should measure these factors at several time points to understand causality within this relationship.

Secondly, participants completed subjective self-report measures, which were not counter balanced. This may have led to an order effect for participants, although data cleaning procedures were in place to ensure that any participants who were not engaged and did not complete measures would have been removed prior to analysis. Future research should consider also conducting face-to-face interviews. Furthermore, individuals’ coping mechanisms for dealing with stressors may influence caregiver burden (e.g. Payne, 2001) and future research should examine this variable in relation to defeat and entrapment.

In the present study, the two time points were 12 months apart. This time period

was selected to be consistent with previous defeat and entrapment research (e.g. Taylor et al., 2011; Griffiths et al., 2014). However, we acknowledge that there may be improvements in symptoms generally across this time period. To address this, we used a statistical method that controlled for the initial level of the outcome (e.g., depression) and the covariation between this and the other predictor variables. Thus, for example, people who scored particularly high or low on depression regressing to the mean at the second time point cannot explain the results of the present work, as this effect had already been statistically removed.

Additionally, there was a retention rate of 66% within this study. Although we anticipated this due to high staff turnover within social care settings (Centre for Workforce Intelligence, 2013), this may lead to conclusions being drawn from individuals that do not represent the original recruited sample (Amico, 2009). Amico (2009) suggested a retention rate of 60% is acceptable, although additional detail should be provided to understand reasons for participant drop out (see Figure 1). Critically, we showed that attrition did not affect the results as when we used a conservative intention to treat analysis (assuming that if every participant had been retained, each would have counted against our hypotheses), the results remained significant.

Two avenues for future research have arisen from the current study. Care staff working in group living homes report lower burden and higher job satisfaction (Boekhorst et al., 2008). Therefore, research should compare the impact of differently designed care homes, to inform the design of future care homes. Secondly, we did not investigate how defeat, entrapment and caregiver burden affect outcomes for residents. It has previously been suggested that staff stress leads to poor care for residents (von Dras et al., 2009). Data could be collected from residents, to provide a direct measure

of their health. For example, low depression and anxiety amongst care staff correlates with higher quality of life for residents (Hoe et al., 2006).

In conclusion, perceptions of defeat and entrapment predicted caregiver burden and depression 12 months later amongst formal caregivers. The results have implications for improving education and training about the development of mental health problems, and future research should consider how caregiver burden affects the quality of care provided.

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Table 1. Baseline sample characteristics

Time 1 (N = 195)		
Gender		
	Male	31 (16%)
	Female	164 (84%)
Employment Status		
	Full-Time	131 (67%)
	Part-Time	64 (33%)
Shift Pattern		
	Days	185 (95%)
	Nights	10 (5%)
Ethnicity		
	White European	144 (74%)
	Asian	33 (17%)
	Other	18 (9%)

Table 2. Correlations between variables

	1	2	3
1. Combined defeat and entrapment	-	.59**	.36**
2. Depression	.59**	-	.42**
3. Caregiver burden	.36**	.42**	-

Table 3. Factor loadings for a forced two-factor extraction

Item		Factor	
<i>Defeat Scale</i>		1	2
	1	.512	.182
	2	.367	.179
	3	.524	.246
	4	.320	.055
	5	.725	.253
	6	.700	.351
	7	.633	.346
	8	.681	.189
	9	.164	.003
	10	.658	.273
	11	.675	.262
	12	.762	.197
	13	.781	.134
	14	.761	.127
	15	.722	.287
	16	.715	.132
<i>Entrapment Scale</i>			
	1	.630	.134
	2	.710	.043
	3	.381	-.082
	4	.679	.094
	5	.716	.151
	6	.745	.053
	7	.817	.016
	8	.657	.028
	9	.726	.106
	10	.693	.165
	11	.795	-.096
	12	.822	-.157
	13	.801	-.258
	14	.834	-.433
	15	.807	-.208
	16	.779	-.271