Bhullar, N., Rickwood, D., Carter, T. and Haridas, S. (2017). Taking care of teenagers, taking care of me: Profiling parental caregiving burden and activity restriction in a sample of Australian parents. *International Journal of Mental Health Nursing, 26 (6),* 593–601. http://dx.doi.org/10.1111/inm.12285

Taking care of teenagers, Taking care of me: Profiling parental caregiving burden and activity restriction in a sample of Australian parents

Navjot Bhullar[*], Debra Rickwood[+], Tegan Carter[*] & Serena Haridas[*]

[*] University of New England

[+] University of Canberra

Correspondence may be sent to Dr Navjot Bhullar, Psychology, University of New England, NSW 2351, Australia. Tele: +61 2 6773 3187; Email: navjot.bhullar@une.edu.au

Published in International Journal of Mental Health Nursing (2017)

Reference:

Bhullar, N., Rickwood, D., Carter, T., & Haridas, S. (2017). "Taking care of teenagers, taking care of me": Profiling parental caregiving burden and activity restriction in a sample of Australian parents. *International Journal of Mental Health Nursing*, *26*, 593-601. doi: 10.1111/inm.12285

Abstract

The current study extends the Activity Restriction Model of Depressed Affect (Williamson, 1998) by exploring the relationship between parental caregiving burden, activity restriction, and depressive symptoms. It investigated the mediating role of restriction on three types of activities (*daily routine*, *personal control*, and *social*) in the relationship between parental caregiving burden and carer depression. Respondents ($N = 203$; $\text{Mean}_{age} = 45.45$ years, $SD = 7.81$; female = 84.7%) were parent-carers of a young person with mental illness and based in Australia. They completed a set of measures assessing caregiving burden, participation in daily routine, personal control and social activities, and depressive symptoms. A multiple mediation analysis revealed that restriction of daily routine, personal control, and social activities indirectly mediated the relationship between parental caregiving burden and parent-carers' symptoms of depression. A latent profile analysis suggested an optimal 3-profile solution. As predicted, profile membership distinguished parent-carers on depressive symptoms ranging from *Normal* to *Severe* levels based on participation in the specific activities. Our results suggest a typology of parent-carers perceiving differential levels of their caregiving burden and activity restriction. Strategies addressing these specific areas provide preventative and promotion measures to optimise carer mental health and well-being.

***Keywords*:** caregiving burden, activity restriction, depression, latent profile analysis, carers of young people

Introduction

Research has documented the negative impact of caring for a family member with a mental illness (Fadden, Bebbington, & Kuipers, 1987; Mental Health Council of Australia [MCA], 2009, 2012). The physical and mental health outcomes of caring for a family member with a physical disability are well established (Edwards, Higgins, Gray, Zmijewski, & Kingston, 2008). There is emerging evidence that caring for a person with a mental illness may have a greater impact on the carer. In particular, the stigma of mental illness and social isolation associated with caring for someone with mental illness appear to result in this added burden. Previous research (e.g., Angold, Messer, Stanhl, Farmer, Costello, & Burns, 1998) found child and adolescent psychiatric symptomatology as sources of parental burden, with length of the offspring's illness associated with greater perceptions of parental burden (Cook, Lefley, Pickett, & Cohler, 1994). Although there is increasing emphasis on early mental health interventions for effective promotion of positive mental health outcomes for young people (Rickwood, 2011), very little attention has been directed toward parents and carers in the context of early intervention. The current study investigated this unexplored area of caring for a young person within an early intervention context to help minimise the adverse impact of caregiving burden on carers' lives.

Caregiving Burden

Carers experience higher levels of psychosocial distress as a result of their carer responsibilities, known as the caregiving burden (Shultz & Sherwood, 2008). In Australia, approximately 12% of the population are carers of older people or people with physical and psychological disability or long-term health conditions (Australian Bureau of Statistics, 2012). One-third of these carers identify themselves as primary carers and the majority of these primary carers are female. Data from the Australian Unity Wellbeing Index revealed that carers have the lowest overall well-being of any group; and present, on average, with moderate levels of depressive symptoms (Cummins et al., 2007). Similarly, Edwards et al. (2008) found that carers reported significantly worse mental health and vitality than the general population and people with a range of serious health conditions, including congestive heart failure and diabetes.

The Activity Restriction Model of Depressed Affect

The activity restriction model of depressed affect (Williamson, 1998) proposes that daily routine activities are restricted by stressful life events, called stressors, and the extent to which life stressors (e.g., physical illness or disability) disrupts one's participation in normal, daily routine activities is detrimental to psychological adjustment. Further, the model posits that major disruptions in normal routine activities result in mental health difficulties such as symptoms of depression and anxiety. A meta-analysis of 34 studies examining the role of activity restriction in caregivers of medical patients found a moderate effect size of the relationship between activity restriction and depression, $r = .34$; 95% $CI = 0.28 - 0.41$ (Mausbach et al., 2011). This may indicate that activity restriction negatively impacts mental health outcomes by undermining an individual's ability to maintain adequate levels of participation in normal routine activities.

An Extension of the Activity Restriction Model

The activity restriction model has been supported by a body of research focusing mostly on physical illness (Williamson, 2000). The present study extended the model by expanding the understanding of restriction to different types of activities in addition to daily routine: these were *personal control* and *social connections*, which are two important life domains within the caregiver population. According to the life span theory of control (Heckhausen & Schulz, 1995), activity restriction poses a significant threat to an individual's sense of primary control, likely resulting in depressive symptoms. Individuals exert primary control characterised by behaviours that engage the external world. Past research has suggested that negative mental health outcomes result when control maintenance strategies do not sufficiently address either actual or perceived loss in primary control (Schulz, Heckhausen, & O'Brien, 1994). In addition, the extent of the impact is dependent upon the relative personal importance of the activity and the effectiveness of strategies to mitigate the impact of loss of sense of control on mental health outcomes.

The responsibilities of caregiving can interfere with normal social and recreational activities leading to increased depressive symptoms among caregivers (Mausbach et al., 2011). Studies have shown that social disengagement, poor social connections, and decreased social activities are associated with negative mental health outcomes (Seeman, Lusignolo, Albert, & Berkman, 2001). Caregiving demands disrupt participation in social activities and can be detrimental to maintaining adequate levels of social networks. Consequently, this disruption interferes with valued life activities. Being unable to continue performing meaningful activities poses a threat to sense of self (e.g., Clark & Bond, 2000). The stigma of mental illness may also mean that engagement in social activities is further restricted when caring for someone with a mental illness (Rickwood, 2011). Becoming a parent and raising a child in itself is a significant life-changing event and can be both a rewarding and challenging experience (Bornstein, 2001). Normal day-to-day parenting is a caregiving role that encompasses some restrictions on activities, including fewer opportunities to socialise and to go out, engage in hobbies and decreased access to social connections. It is likely that parents caring for their children and adolescents with mental illness may report added levels of parental caregiving burden and activity restriction (Haveman et al., 1997).

The Current Study

The primary aim of the present study was to examine caregiving burden in parents of young people with mental illness, and to investigate the role of activity restriction in mediating the relationship between parental caregiving burden and carers' depressive symptoms. This study extended the activity restriction model of depressed affect by incorporating restriction of personal control and social activities, as well as daily routine activities. It was hypothesised that restriction of *daily routine*, *personal control,* and *social* activities would mediate the relationship between parental caregiving burden and parent-carers' depressive symptoms.

A second extension involved the application of a latent profile analysis to identify homogenous groups of parent-carers who shared similar levels of caregiving burden and activity restriction, and subsequently to explore the way in which profile membership was associated with carers' depressive symptoms. We hypothesised that at least two qualitatively different profiles would emerge: the first with respondents experiencing greater caregiving burden and restrictions of all three activities, and the second profile in which respondents would experience lower levels of caregiving burden and greater participation in all three types of activities. It was further predicted that the first profile would report greater carer depression compared with the latter.

Method

Participants

The study sample (N = 203, mean$_{age}$= 45.45 years, SD = 7.81) comprised parents who were the caregivers of young people (aged between 12-25 years) with mental illness. The majority of respondents (83.7%) reported to be the primary caregivers (compared with 70% nationally; ABS, 2012), with 84.7% women and 8.9% men. Thirteen participants (6.4%) did not disclose their gender. A high proportion of the participants (87%) had completed either high school or tertiary studies (i.e., college or undergraduate university degree). More than 75% of participants indicated a household income in excess of AUS$60,000 per annum.

Measures

Caregiving Burden. A 19-item *Burden Assessment Scale* (Reinhardt, Gubman, Horwitz, & Minsky, 1994) was used to assess parental caregiving burden. Participants were asked to indicate the extent of caregiving experiences during the last six months. Scale responses ranged from 1 = *not at all* to 4 = *a lot*. Items were averaged with higher scores indicating greater caregiving role demands. Cronbach's α for the present study was .92.

Daily Routine Activities. A 9-item *Activity Restriction Scale* (Williamson & Schultz, 1992) was used to assess participation in daily routine activities. Respondents were asked to indicate the extent to which their daily routine activities were limited due to caring for a young person. Scale responses ranged from 1 = *not limited at all* to 3 = *limited a lot*. Items were reverse-scored and averaged with higher scores indicating greater participation in routine daily activities. Cronbach's α for the present study was .91.

Personal Control Activities. Items assessing participation in activities exhibiting personal control were taken from a 7-item *Personal Mastery Scale* (Pearlin & Schooler, 1978). Participants were asked to indicate the extent to which they have control over participation in these activities resulting from caring for a young person. Scale responses ranged from 1 = *strongly disagree* to 5 = *strongly agree*. Items were averaged with higher scores indicating greater participation in personal control activities. Cronbach's α for the present study was .82.

Social Activities. Items assessing participation in social activities were derived from a 20-item *Social Connectedness Scale-Revised* (Lee, Keough, & Sexton, 2002). Participants were asked to indicate the level of control over participation in social activities as a result of caring for a young person. Scale responses ranged from 1 = *strongly disagree* to 5 = *strongly* *agree*. Items were averaged with higher scores indicating greater participation in social activities. Cronbach's α for the present study was .94.

Depressive Symptoms. Depressive symptoms in carers were measured using the 7-item depression subscale of the *Depression, Anxiety, and Stress Scales* (*DASS-21*; Lovibond & Lovibond, 1995). Scale responses ranged from 0 = *did not apply to me* to 3 = *applied to me very much, or most of the time*, with higher scores indicating greater levels of depressive symptoms. The summed score was subsequently multiplied by 2 for comparison with DASS-42 norms (Lovibond & Lovibond, 1995). Cronbach's α for the current study was .91.

Procedure

Before the commencement of this study, ethics approval was received from the university's human research ethics committee. We contacted various agencies within Australia (e.g., carer's associations, youth mental health services, social networking sites, and Department of Child Protection and Family Support) either via email or phone seeking their assistance with participant recruitment for the present study. These agencies advertised our study by either providing a URL link of the study survey on their website or emailing the details to their members. Participants across Australia self-selected to participate in this study and completed the survey online using Qualtrics survey.

Statistical Analyses

A multiple mediation analysis was performed using the latest *Process* v2.15 approach (Hayes, 2013) to examine whether participation in the three types of activities mediated the relationship between caregiving burden and depressive symptoms. Finally, a latent profile analysis (LPA) using Mplus (Version 7; Muthen & Muthen, 1998-2012) was conducted to generate profiles of individuals based on the patterns of their responses on demands of caregiving and activity restriction in the three types of activities. A number of model fit indices were used to assess for likelihood difference such as the Bayesian information criterion (BIC), sample-size adjusted BIC, and Lo-Mendel-Rubin (LMR) likelihood ratio test (Schwarz, 1978; Sclove, 1987). Additionally, entropy was used as an index of model classification with values close to 1 deemed as ideal. To facilitate interpretation of profiles, all four profiling variables were converted to Z scores ($M = 0$, $SD = 1$). One-way multivariate analysis of variance (MANOVA) was conducted to determine profile differences for each of the profiling variables, and the outcome variable (depressive symptoms).

Results

Descriptive Statistics

Means, standard deviations, range, and intercorrelations of the key variables are presented in Table 1. On average, participants reported moderate levels of caregiving burden. Additionally, moderate levels of participation in personal control and social activities were reported; while participation in routine daily activities was marginally below mid-point. The reported depressive symptoms fell in the "Moderate" range as per the DASS-42 norms (Lovibond & Lovibond, 1995). As expected, greater restriction in carers' daily routine, personal control, and social activities were associated with experiencing greater levels of depressive symptoms.

Multiple Mediation Analysis

A multiple mediation analysis was conducted to examine whether participation in routine daily, personal control, and social activities significantly mediated the relationship between parental caregiving burden and caregiver depressive symptomology. The overall mediation model explained 56% of the variance in parent-carer depressive symptomology, $F(4, 198) = 63.10$, $p < .001$. The bias-corrected bootstrap 95% confidence intervals (CIs), based on 1000 bootstrap samples for the indirect effects ranged from 0.01 to 1.71 for daily routine activities, 0.15 to 2.01 for personal control activities, and 0.96 to 2.60 for social activities. Pairwise comparisons of specific indirect effects revealed no significant difference between the three mediator variables (Hayes, 2013). Specifically, Contrast 1 (comparing specific indirect effects of daily routine with personal control activities) was not significantly different from zero (-1.57 to 1.30), Contrast 2 (comparing specific indirect effects of personal control with social activities was not significantly different from zero (-2.02 to .36), and Contrast 3 (comparing specific indirect effects of daily routine with social activities was also not significantly different from zero (-2.20 to .76). The results, summarised in Figure 1, revealed that parental caregiving burden indirectly influenced parent-carer depression through its effect on daily routine activities, personal control activities, and social activities.

Latent Profile Analysis

The previous analysis suggested substantial alignment between parental caregiving burden and restriction of daily routine, personal control, and social activities. A latent profile analysis was conducted to identify a typology of parent-carers based on their perceived caregiving burden and restriction of activities. Results, summarised in Table 2, revealed that the 3-profile solution fit the data significantly better than 2. Although the 3- and 4-profile solutions produced similar BIC and AIC values suggesting comparable fit, the LMR and entropy fit indices were significantly worse for the 4-profile solution. Further examination of the 3- and 4-profile solutions revealed some similarities, with a small quantitative shift in Profile 3, split into two similar groups in Profile 4. Given no qualitative differences and any better fit indices, a 3-profile solution was retained (see Figure 2).

Profile group 1 (*n* = 72, 35%), labelled as *Sufferers*, comprised parent-carers who perceived greater caregiving burden and restriction of all three types of activities. Carers in Profile group 2 (*n* = 97, 48%), labelled as *Battlers*, exhibited a more neutral outlook, with standardised scores just below the mean for caregiving burden and participation in daily routine activities, and just above the mean for participation in personal control and social activities. Profile group 3 (*n* = 34, 17%), labelled as *Resilient*, perceived low levels of caregiving burden and reported greater participation in all three types of activities. Overall, results suggested that greater perceived caregiving burden generally tended to co-occur with greater restriction of daily routine, personal control, and social activities. An interesting finding was one profile group, *Battlers*, characterised by respondents with inconsistent response patterns, perceived greater caregiving burden with restriction of daily routine activities only. Respondents in this profile still maintained participation in personal control and social activities.

A MANOVA was conducted to determine whether four profiling variables significantly differed across the three identified profiles (Sufferers, Battlers, and Resilient), and whether profile membership was significantly associated with depressive symptoms in carers. The results of the MANOVA and follow-up univariate tests for each of the profile groups, with post-hoc group comparisons using Tukey's HSD test, are presented in Table 3. As expected, parent-carers in the *Sufferers* profile reported significantly greater caregiving burden and restriction of activities in all three domains, followed by respondents in the *Battlers* profile. *Resilient* respondents perceived significantly less parental caregiving burden and reported significantly greater levels of participation in all three types of activities as compared with respondents in the other two profile groups. Profile membership was also significantly associated with depressive symptoms in parent-carers. Respondents in the *Sufferers* profile reported significantly greater depressive symptoms than the other two profile groups. Parent-carer respondents in the *Battlers* group reported significantly greater depressive symptoms than the *Resilient* profile group. Comparison of the DASS-42 norms (Lovinbond & Lovibond, 1995) revealed that the *Sufferers* fell in the "Severe", the *Battlers* in the "Moderate", and the *Resilient* in the "Normal" category of depressive symptoms.

As a supplementary analysis, we also investigated profile membership differences on key demographic variables. There were no significant group (profile) differences in age *F*(2,

200) = 0.56, *p* = .57 and income levels, *F*(2, 187) = 2.67, *p* = .072. Finally, a chi-squared test revealed that profile membership was also not significantly associated with gender, $\chi(2)$ = 2.08, *p* = .35.

Discussion

The current study extended the activity restriction model of depressed affect (Williamson, 1998) by examining the unique contribution of restriction of three types of activities in parent-carers' depressive symptoms. Consistent with previous research (e.g., Angold et al., 1998), our findings suggested that parents of young people with mental illness reported high levels of caregiving burden. In addition, greater perceived parental caregiving burden was associated with higher levels of depressive symptomology experienced by parent-carers. This finding is consistent with previous research on the relationship between caregiving burden and symptoms of depression (Shultz & Sherwood, 2008). Higher levels of caregiving burden were also associated with restriction of daily routine activities, personal control activities, and social activities; and greater restrictions in all activities were associated with higher levels of depressive symptoms. These results also support previous research on the association between restriction in these types of activities and depressive symptoms (Heckhausen & Schulz, 1995; Seeman et al., 2001; Williamson, 1998).

Restriction of three types of activities (daily routine, personal control, and social) mediated the relationship between caregiving burden and symptoms of depression in parents of young people with mental illness. This suggests that agentic sense of self (primary control) and social involvement (engagement in activities), in addition to participation in daily routine activities, may be the processes linking caregiving burden with depressive symptoms experienced by caregivers. Contrary to our prediction, the LPA results identified three profile-groups of carers (*Sufferers*, *Battlers*, and *Resilient*) with differential reported levels of caregiving burden and activity restriction. Profile membership was significantly associated with level of depressive symptoms in parent-carers, with the Sufferers group reporting higher levels of depressive symptoms as compared with the Battlers and the Resilient profile groups, and the Battlers group reporting greater depressive symptoms than the Resilient group. All three typologies of parent-carers were found to be similar in age, gender, and household income suggesting no demographic variations in the outcome variable over and above profile membership in the current sample. This typology would be beneficial for clinicians to develop effective personalised prevention strategies targeted at a subset of carers, as explained in the implications section below.

Limitations and Future Research Directions

Limitations of the research include possible biases stemming from the cross-sectional correlational design surveyed at only one point in time, which limits causal conclusions. Future research might address these limitations by using expanded designs such as longitudinal and mixed methods approaches, and multiple sources of data such as peer observer reports and objective observations. Second, our sample was recruited from one country (i.e., Australia), therefore, the present findings should not be assumed to generalise across different countries. Significant differences in parental caregiving exist between industrialised and developing countries (Bornstein & Putnick, 2012). For example, the daily struggle of finding adequate resources in poorer nations adds another layer to parental caregiving demands (McCloyd, 1998), whereas, wealthy nations such as Australia provide a social security of benefits and payments to meet a minimum adequate standard of living (Department of Human Services, 2015). Third, our study did not examine the types and severity of mental illnesses experienced by the young people the parent participants were caring for. Understanding the impact of different types and stages of mental illnesses is an important future research issue. Another limitation of the present study was that no comparison group of parents of young people without mental illness was used to examine if there was an added caregiver burden resulting in higher levels of depression in parents of young people with mental illness. Future comparative research could employ a matched sample of parents of young people, with or without mental illness, to examine and compare the relationship between parental caregiving burden and carer depression via underlying mechanisms of activity restriction. Finally, the model explained over half of the variance (56%) in carers' depressive symptoms. This indicates that accompanying processes such as carers' attitudes to mental health and their levels of general health may also link this life stressor with levels of depressive symptoms.

Despite the limitations of the current study, the results offer a preliminary look at the potential role of restriction of activities in daily routine, personal control, and social domain in explaining the role of parental caregiving in parent-carer depression. Although the results support the activity restriction model of depressed affect, further research is needed to clarify the relationships. For example, a comparison of the chronicity and severity of mental health illnesses of care recipients and between caregiving groups could be examined. Additionally, future research could focus on other protective psychosocial variables such as self-esteem, coping resources, self-efficacy, and optimism.

Clinical Implications

An important implication of the present findings is that interventions to support parent-carers should be aimed specifically at enabling parents of young people with mental illness to maintain important activities in specific realms of life. For example, the activity restriction considered in the present study comprised behavioural and cognitive domains of influence. Mausbach et al. (2008) reported that social and recreational activities are important aspects of behavioural interventions. Therefore, interventions stemming from behavioural or cognitive-behavioural therapies would enable caregivers to maintain their important social activities, thus fostering caregiver exposure to pleasant events (Coon, Thompson, Steffen, Sorocoo, & Gallagher-Thompson, 2003). Similarly, psychological treatment may need to focus on strategies that sustain a sense of personal control to achieve favourable therapeutic outcomes. Alternatively, carer education information as a promotion strategy could be distributed to inform caregivers that accommodating their valued recreational and social activities whilst undertaking their caregiving role is important for better mental health outcomes.

Furthermore, our parent-carer typology could contribute to an emerging area of understanding how to support carers in the context of an early intervention for mental health problems in young people (the time period when most mental disorders first emerge) (Rickwood, 2011). For instance, carer-typology information points to the important role of formal service provision of coordinated clinical care (e.g., Mental Health Nurse Incentive Programme; Department of Health, 2015) to help parent-carers in the Sufferers profile group to cope better with caring for their children with mental illness. It may be possible to develop resources that can be used by Australian frontline health professionals (e.g., mental health nurses) for carers by identifying and facilitating participation in those activities most important to their well-being. In addition, specific preventative interventions can be aimed at parent-carers in the Battlers profile group in meeting their daily routine activities. Their participation in such activities will help them feel connected to their community and also increase their sense of autonomy which tends to buffer against depressive symptoms (Bhullar, Hine, & Phillips, 2014).

Conclusion

We investigated the relationship between caregiving burden and depressive symptoms in parent-carers of young people with mental illness. We found that this relationship was mediated by restriction of daily routine, personal control, and social activities. Our results identified a typology of parent-carers, with differing levels of reported caregiver burden and activity restriction, which significantly influenced their reported depressive symptomology. Intervention options may incorporate strategies addressing these specific activity domains, thereby promoting favourable parent-carer mental health and well-being.

References

Angold, A., Messer, S.C., Stangl, D., Farmer, E.M.Z., Costello, E.J., & Burns, B.J. (1998). Perceived parental burden and service use for child and adolescent psychiatric disorders. *American Journal of Public Health, 88*, 75 - 80.

Australian Bureau of Statistics. (2012). *Disability, Ageing, and Carers, Australia: Summary of Findings, 2012*. Catalogue No. 4430.0. Canberra: Australian Bureau of Statistics.

Bhullar, N., Hine, D.W., & Phillips, W.J. (2014). Profiles of psychological well-being in a sample of Australian undergraduate students. *International Journal of Psychology, 49*, 288 - 294. doi: 10.1002/ijop.12022.

Bornstein, M.H. (2001), Parenting: Science and practice (editorial). *Parenting: Science and Practice*, *1*, 1 - 4. doi:10.1080/15295192.2001.9681208

Bornstein, M.H., & Putnick, D.L. (2012), Cognitive and socioemotional caregiving in developing countries. *Child Development*, *83*, 46 – 61 doi:10.1111/j.1467-8624.2011.01673.x

Cameron, J.I., Franche, R., Cheung, A.M., & Stewart, D.E. (2002). Lifestyle interference and emotional distress in family caregivers of advanced cancer patients. *American Cancer Society, 94,* 521-527.

Clark, M.S., & Bond, M.J. (2000). The effect on lifestyle activities of caring for a person with dementia. *Psychology, Health, & Medicine, 5*, 13-27.

Cook, J.A., Lefley, H.P., Pickett, S.A., & Cohler, B.J. (1994). Age and family burden among parents of offspring with severe mental illness. *American Journal of Orthopsychiatry, 64*, 435 - 447.

Coon, D.W., Thompson, L., Steffen, A., Sorocco, K., & Gallagher-Thompson, D. (2003). Anger and depression management: Psychoeducational skill training interventions for women caregivers of a relative with dementia. *Gerontologist, 43*, 68-689.

Cummins, R., Hughes, D.J., Tonmy, A., Gibson, A., Woerner, J., & Lai, L. (2007). The wellbeing of Australians- carer health and wellbeing: Australian Unity Wellbeing Index Survey 17.1. Deakin University: Australian Unity and Carers Australia.

Department of Health. (2015). The Mental Health Nurse Incentive Programme: Final Report. Australian Government. Retrieved from: http://www.health.gov.au/internet/main/publishing.nsf/content/work-pr-mhnip

Department of Human Services. (2015). Australian Government. Retrieved from: https://www.humanservices.gov.au/

Edwards, B., Higgins, D.J., Gray, M., Zmijewski, N., & Kingston, M. (2008). The nature and impact of caring for family members with a disability in Australia. Melbourne: Australian Institute of Family Studies.

Fadden, G., Bebbington, P., & Kuipers, L. (1987). The burden of care: The impact of functional psychiatric illness on the patient's family. *British Journal of Psychiatry, 150*, 285 - 292.

Haveman, M., van Berkum, G.Reijnders, R., & Heller, T. (1997). Differences in service needs, time demands, and caregiving burden among parents of persons with mental retardation across the life cycle. *Family Relations*, *46*, 417- 425.

Hayes, A.F. (2013). *Introduction to Mediation, Moderation and Conditional Process Analysis*. New York: The Guilford Press.

Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review, 102*, 284-304.

Lee, R.M., Keough, K.A., & Sexton, J.D. (2002). Social connectedness, social appraisal, and perceived stress in college women and men. *Journal of Counselling & Development, 80,* 355-361.

Lovibond, S.H., & Lovibond, P.F. (1995). *Manual for the depression anxiety stress scales.* Sydney: Psychology Foundation.

Mausbach, B.T., Chattillion, E.A., Moore, R.C., Roepke, S.K., Depp, C.A., & Roesch, S. (2011). Activity restriction and depression in medical patients and their caregivers: a meta-analysis. *Clinical Psychology Review, 31*, 900-908. doi: 10.1016/j.cpr.2011.04.004

McLoyd, V.C. (1998). Socioeconomic disadvantage and child development. *American Psychologist*, *53*, 185-204.

Mental Health Council of Australia. (2009). *Adversity to advocacy: The lives and hopes of mental health carers.* Canberra: MHCA.

Mental Health Council of Australia. (2012). *Recognition and respect: Mental health carers report.* Canberra: Mental Health Council of Australia.

Muthén, L. K., & Muthén, B. O. (1998-2012). *Mplus user's guide. Sixth edition.* Los Angeles, CA: Muthén & Muthén.

Nieboer, A.P., Schulz, R., Matthews, K.A., Scheier, M.F., Ormel, J., & Lindenberg, S.M. (1998). Spousal caregivers' activity restriction and depression: A model of changes over time. *Social Science & Medicine, 47*, 1361-1371.

Pearlin, L.I., & Schooler, C. (1978). The structure of coping. *Journal of Health and Social Behaviour, 19,* 2-21.

Reinhard, S.C., Gubman, G.D., Horwitz, A.V., & Mintz, S. (1994). Burden assessment scale for families of the mentally ill. *Evaluation and Program Planning, 17*, 79-88.

Rickwood, D. (2011). Promoting youth mental health: Priorities for policy from an Australian perspective. *Early Intervention in Psychiatry*, 5, 40-45.

Schwarz, G. (1978). Estimating the dimension of a model. *The Annals of Statistics, 6*, 461-464.

Sclove, S. L. (1987). Application of model-selection criteria to some problems in multivariate analysis. *Psychometrika, 52*, 333-343.

Seeman, T.E., Lusignolo, T.M., Albert, M., & Berkman, L. (2001). Social relationships, social support, and patterns of cognitive aging in healthy, high, functioning older, adults: MacArthur studies of successful aging. *Health Psychology, 20*, 243-255.

Schulz, R., Heckhausen, J., & O'Brien, A.T. (1994). Control and the disablement process in the elderly. *Journal of Social Behaviour and Personality, 9*, 139-152.

Schulz, R., & Williamson, G.M. (1991). A two-year longitudinal study of depression among Alzheimer's caregiver. *Psychology and Aging, 6*, 569-578.

Schulz, R., & Sherwood, P.R. (2008). Physical and mental health effects of family caregiving. *American Journal of Nursing, 108*, 23-27.

Williamson, G.M. (1998). The central role of restricted normal activities in adjustment to illness and disability: A model of depressed affect. *Rehabilitation Psychology, 43,* 327-347.

Williamson, G. M. (2000). Extending the activity restriction model of depressed affect: evidence from a sample of breast cancer patients. *Health Psychology, 19*, 339–347.

Williamson, G. M., & Schulz, R. (1992). Pain, activity restriction, and symptoms of depression among community-residing elderly adults. *Journal of Gerontolog*y, *47*, 367–372.

Table 1

Intercorrelations, Means, Standard Deviations (SDs), and Range of Key Study Variables

Variables	1.	2.	3.	4.	5.
1. Caregiving Burden	-				
2. Daily Routine Activities	-.72**	-			
3. Personal Control Activities	-.68**	.58**	-		
4. Social Activities	-.54**	.51**	.67**	-	
5. Depressive Symptoms	.59**	-.56**	-.64**	-.68**	-
Mean (*SD*)	2.53 (0.49)	1.88 (0.49)	3.22 (0.60)	2.70 (0.61)	14.88 (4.11)
Theoretical Range	1-4	1-3	1-5	1-5	0-21

Note. $N = 203$ $^{*}p < .05$, $^{**}p < .001$

Table 2

Model Fit Indices for Latent Profile Solutions

# of Profiles	*BIC*	*AIC*	*LMR*	*Entropy*
1	2342.85	2317.51	-	-
2	2089.91	2048.72	269.37^{***}	.87
3	2002.09	1945.06	110.24^{***}	.84
4	2006.51	1933.64	21.34	.78

Note: *BIC* = Bayesian information criterion, *AIC* = Akaike information criterion, *LMR* = Lo-Mendel-Rubin likelihood ratio test. $^{***}p < .001$

Lowest BIC and AIC indicate better fit together with highest number of profiles with significant lowest LMR and entropy with values close to 1 deemed as ideal.

Table 3

Means, Standard Errors, and Mean Differences Across Three Carer-Profiles

Variables	Profile 1 *Sufferers* (n= 72)		Profile 2 *Battlers* (n= 97)		Profile 3 *Resilient* (n= 34)		Univariate	
	M	*SE*	*M*	*SE*	*M*	*SE*	$F(2, 200)$	Partial η^2
Caregiving Burden	2.98^a	0.03	2.46^b	0.03	1.78^c	0.05	252.16^{***}	.72
Daily Routine Activities	1.51^a	0.03	1.88^b	0.03	2.69^c	0.05	188.99^{***}	.65
Personal Control Activities	2.68^a	0.05	3.36^b	0.04	3.95^c	0.07	129.35^{***}	.56
Social Activities	2.76^a	0.05	3.49^b	0.04	3.89^c	0.07	95.55^{***}	.49
Outcome								
Depressive Symptoms	20.22^a	0.65	13.80^b	0.56	5.57^c	0.95	83.68^{***}	.46

Notes: $N = 203$. Wilks' $\Lambda = .14$, $F(10, 392) = 66.87$, $p < .001$, partial $\eta^2 = .63$. Means with different superscripts (in rows) differ significantly at $p < .05$ based on Tukey's HSD post-hoc test.

$^{***}\ p < .001$

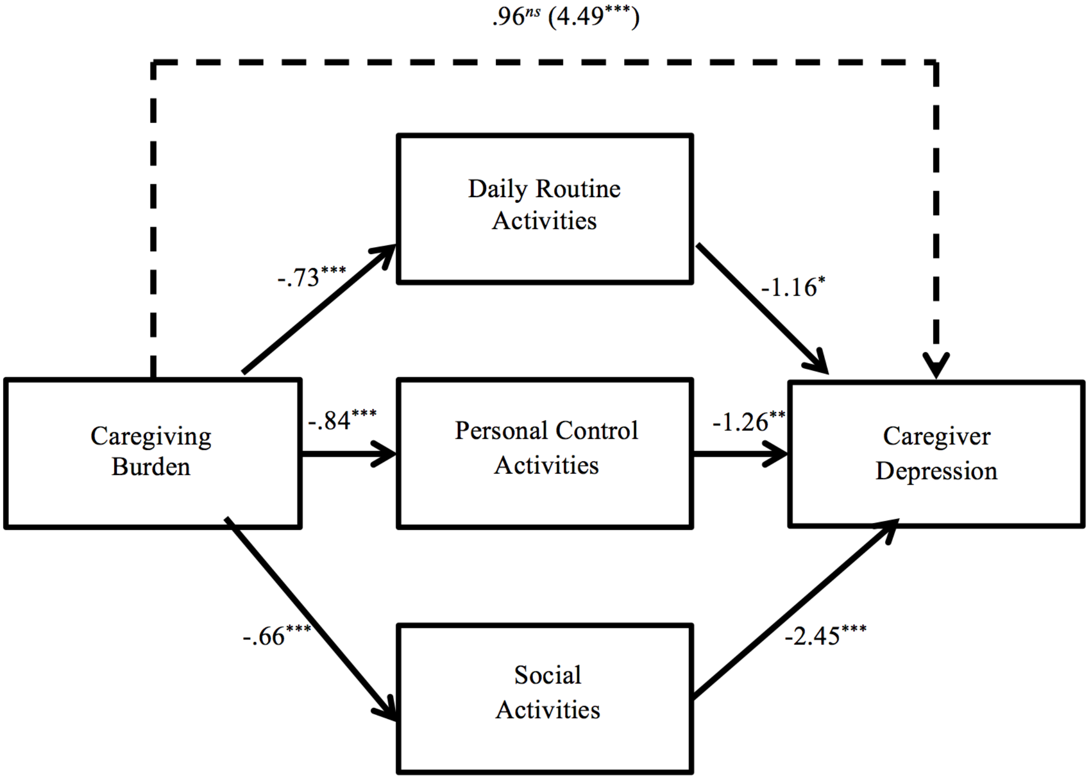

Figure 1. Daily routine activities, personal control activities, and social activities as mediators of the relationship between parental caregiving burden and parent-carers' reported levels of depressive symptoms. Overall the model explained 56% of variance in caregiver depression. All values are unstandardised beta coefficients (Hayes, 2013). The value in parentheses is the total effect representing the relationship between caregiving burden and carer depression prior to controlling for three mediators (daily routine, personal control and social activities).

Solid lines represent significant relationships whereas broken lines indicate non-significant relationships.

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$, *ns* = not significant ($p = .105$).

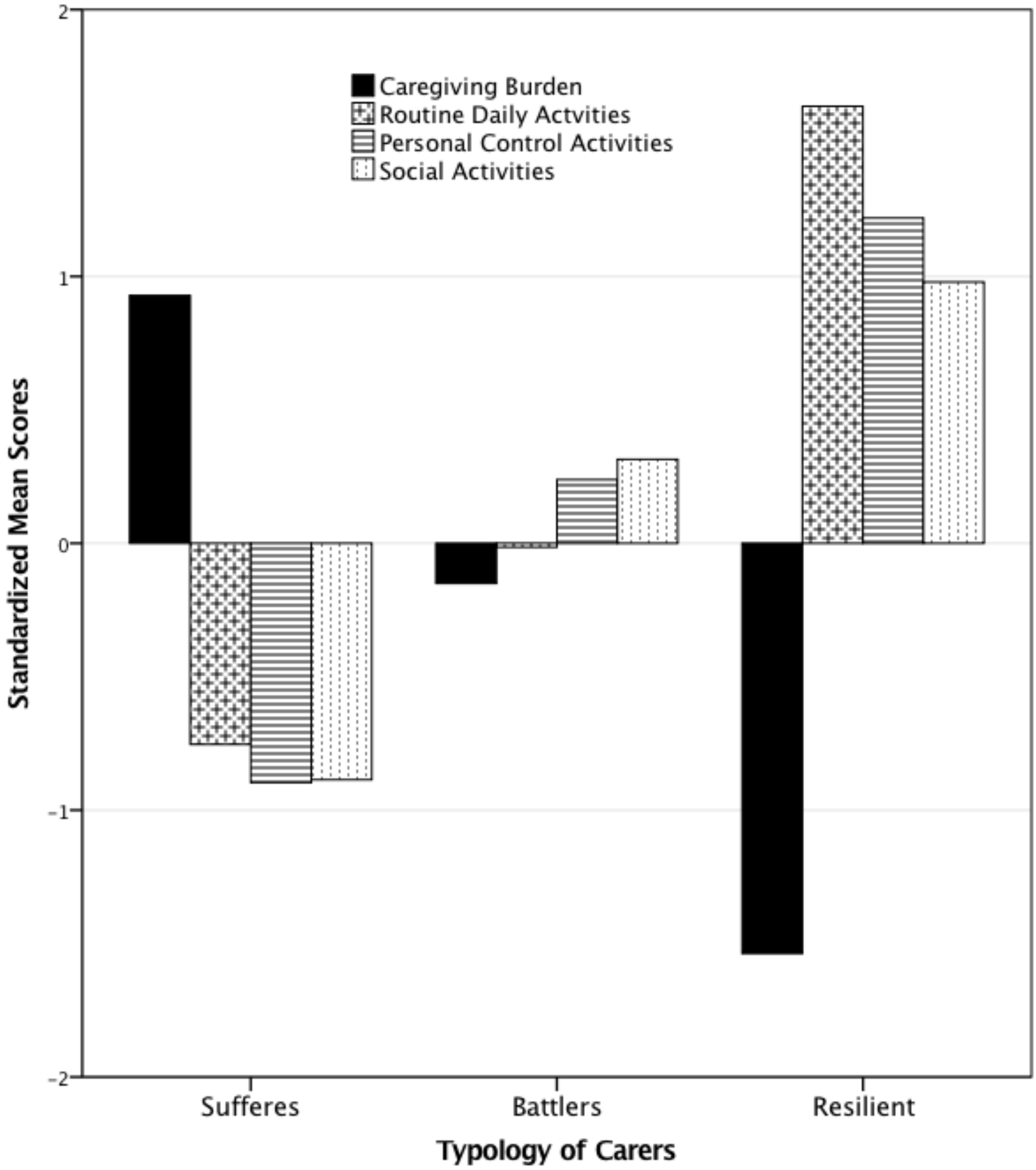

Figure 2: Standardised means (*M* = 0, *SD* = 1) of four indices of caregiving burden and activity restriction across 3-profile typology of carers.