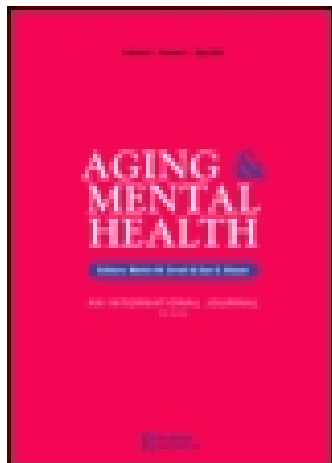


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A longitudinal investigation of repressive coping and ageing

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A longitudinal investigation of repressive coping and ageing

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Objectives: Two studies investigated the possibility that repressive coping is more prevalent in older adults and that this represents a developmental progression rather than a cohort effect. Study 1 examined repressive coping and mental health cross-sectionally in young and old adults. Study 2 examined whether there was a developmental progression of repressive coping prevalence rates in a longitudinal sample of older adults.

Method: Study 1 compared younger adults (mean age 27.6 years) with older adults (mean age 74.2 years) on inventories of mental health and well-being and examined the prevalence of repressive coping in both samples. Study 2 re-tested a sample of older adults previously reported following an interval of 7 years.

Results and conclusion: Study 1 – in line with previous research older adults demonstrated greater psychological well-being and had a higher prevalence of repressive coping than younger adults (at 30% vs. 12% respectively). Study 2 – the data indicated that the prevalence of repressive coping rose from 41% at the first time of testing (2002) to 56.4% at the second testing interval (2009). These results suggest that repressive coping may increase across the lifespan in certain individuals and continue to increase throughout older adulthood. Furthermore, this increase in repressive coping with age appears to result in better well-being in those older adults who become repressive copers.

Keywords: ageing; repressive coping; psychopathology; well-being; thought suppression

Introduction

That humans age and die is a self-evident truth. That we expend considerable energy avoiding the fact of death is also evident (Becker, 1973; Gailliot, Schmeichel, & Baumeister, 2006; Soloman, Greenberg, & Pyszczynski, 1991). Yet one might imagine that, as people get older, it becomes harder to avoid the realisation that one's time in life is limited and will end. Older adults are faced with the decline and death of friends, relatives, retirement, the ageing of their own body, the decline of certain faculties and health issues. But what are the consequences of these realisations and how are they dealt with? It is plausible that with age people become despondent in the face of unavoidable losses, leading to greater psychopathology and reduced well-being. However, many studies indicate that later life is characterised by good levels of well-being and mental health that often rivals that of younger adults (Blazer, 2002; Carstensen, Pasupathi, Mayr, & Nesselroade, 2000; Carstensen et al., 2011; Diener & Suh, 1997). There is also evidence that the prevalence of depression and anxiety may be lower in older than younger adults. Thus, several studies have shown that there is a negative correlation between depression and age when controlling for confounds such as income, disability, marital status, educational level and gender (Blazer, Burchett,

Service, & George, 1991; Fiske, Wetherell, & Gatz, 2009; Jorm, 2000; Weber et al., 2012).

Thus, the data from convergent sources appear to suggest that old age is a time of good mental health for older adults. These findings are extended and supported by studies demonstrating that older adults show selective biases towards positive information and away from negative stimuli (Carstensen, 2006). The findings show a greater degree of positivity in older adults and have been termed the 'positivity effect' (Mather & Carstensen, 2005; Samanez-Larkin, Robertson, Mikels, Carstensen, & Gotlib, 2009).

Carstensen's socioemotional selectivity theory suggests that it is the perception that time is running out (as one ages) that results in motivational shifts with ageing (Carstensen, Isaacowitz, & Charles, 1999). Therefore, younger adults are motivated to expend energy on tasks which will reward the person later, for example, education, family and forming new relationships. As one ages, the possibility of gaining rewards in the future diminishes. Thus, it does not make sense for older adults to expend considerable energy chasing future rewards and instead they maximise current satisfaction. In line with this theory, Riediger, Schmiedek, Wagner, and Lindenberger (2009) demonstrated that emotional well-being increased

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with age in a sample of 378 individuals between 14 and 86 years.

Despite evidence of enhanced positivity (Carstensen, Fung, & Charles, 2003), declining depression with age (Jorm, 2000) and increased well-being (Riediger et al., 2009), the mechanisms that underpin these effects remain unknown. Furthermore, debate continues within the literature over whether these effects are the result of cohort effects or developmental progression, although there is appreciation that both processes are probably at work (Jorm, 2000).

Several studies have reported decreased negative affect in older adults (Carstensen et al., 2000; Diener & Suh, 1998; Gross et al., 1997), yet the effects reported may be due to cohort differences. Longitudinal designs are necessary to examine potential mechanistic accounts of positivity effects in older adults. However, longitudinal studies examining changes in well-being across the lifespan are relatively rare, and have produced somewhat inconsistent findings. For example, Costa et al. (1987) reported no significant changes in negative or positive affect over a 9-year period in a sample of 4942 participants aged between 25 and 74. In contrast, Stacey and Gatz (1991) reported decreasing negative and positive affect over a 13-year period; however, the effects were small. Similarly, Charles, Reynolds, and Gatz (2001) who conducted a large-scale longitudinal study over 21 years showed that negative affect decreased with age for all cohorts, but the rate of decrease was smallest among the oldest participants. Positive affect was stable in young and middle-aged but showed slight decreases in the older adults. However, one study by Carstensen et al. (2011), that examined emotional well-being longitudinally over a 10-year period, demonstrated that ageing was related to better emotional well-being in addition to greater emotional stability. Furthermore, these relationships remained after controlling for personality, verbal fluency, physical health and demographic factors.

In addition to these studies, it is important to consider personality changes across the lifespan as certain personality dimensions (chiefly neuroticism and extraversion) affect propensity to experience negative affect. Furthermore, studies note clear associations between personality and susceptibility to mental health issues (Weber et al., 2012). There is great debate in the literature over the stability of personality over time with mixed findings (Caspi, Roberts, & Shiner, 2005; Costa, Herbst, McCrae, & Siegler, 2000; Costa & McCrae, 1997; McCrae & Costa, 2003; Mischel, & Shoda, 2008; Roberts, Walton, & Viechtbauer, 2006). However, many studies report a decline in neuroticism with age (Roberts, Robins, Caspi, & Trzesniewski, 2003; Soubelet & Salthouse, 2011; Srivastava, John, Gosling, & Potter, 2003).

The previous study of Erskine, Kvavilashvili, Conway, and Myers (2007) attempted to investigate one explanatory mechanism that may underlie positivity effects – a possible increase in repressive coping with age. Repressive coping can be conceptualised as an automatic avoidance of negative and/or threatening information (Myers, 2000, 2010; Myers et al., 2007). Repressors

score low on trait anxiety scales (measured by trait anxiety inventories) and high on defensiveness (often measured by the Marlowe–Crowne (MC) Social Desirability Scale, Crowne & Marlowe, 1964). Weinberger, Schwartz, and Davidson (1979) were the first to propose this method of identifying repressors. Furthermore, repressive coping status is stable over a 12-week period in healthy participants (Zachariae et al., 2004).

Studies indicate that between 10% and 20% of young adults are repressive copers (Myers & Reynolds, 2000; Myers & Vetere, 1997; Phipps & Srivastava, 1997). In contrast, prior to Erskine, Kvavilashvili, Conway, and Myers (2007) there were no data available on the prevalence of repressive coping in older adults. This study was the first to demonstrate that repressive coping was more prevalent in older adults, with 41% of their older adult sample (mean age 73) exhibiting a repressive coping style compared to 11% of the younger adult sample (mean age 20). Importantly, Erskine, Kvavilashvili, Conway, and Myers (2007) also demonstrated that older adults showed significant mental health advantages with lower scores on depression, psychoticism, rumination and thought suppression. In addition, older adults also showed reductions in personality measures (schizotypal personality and neuroticism) linked to unusual beliefs and behaviours, emotional stability and propensity for negative affect.¹ Furthermore, older repressors showed significant psychological advantages as demonstrated by lower scores on depression, neuroticism, unhappiness, schizotypal personality, illness attitude scale, thought suppression and greater happiness when compared to older non-repressors. On the basis of these findings, Erskine, Kvavilashvili, Conway, and Myers (2007) proposed that high incidence of repressive coping in old age could be one potential mechanism underlying the positivity effect, accounting also for the reductions in anxiety and depression with age (Carstensen et al., 2000, 2003; Jorm, 2000).

In order to assess this idea further, and to replicate Erskine, Kvavilashvili, Conway, and Myers' (2007) initial findings, two studies were conducted. The aim of Study 1 was to examine the prevalence of repressive coping and its relationship to ageing and mental health in a new sample of older and younger adults. In addition, we wanted to investigate whether older adults would show mental health advantages in comparison to a younger sample using previously un-investigated measures (General Health Questionnaire, Goldberg & Williams, 1988) and whether they would also show higher rates of repressive coping. To investigate the developmental progression of repressive coping, in Study 2, the sample of older adults reported by Erskine, Kvavilashvili, Conway, and Myers (2007) was re-tested after an interval of 7 years. An increase in rates of repressive coping between Time 1 (2002 – mean age 73) and Time 2 (2009 – mean age 80) would represent good evidence of a developmental progression rather than a cohort effect. Study 2 also examined personality changes, as measured by the Eysenck Personality Questionnaire (Eysenck, Eysenck, & Barrett, 1985), on three dimensions: introversion/extraversion, neuroticism and psychoticism.

Study 1

Method

Participants

Sixty-six participants (33 older adults – 13 males and 20 females, mean age 74.15 years, $SD = 7.60^2$ and 33 younger adults – 8 males and 25 females, mean age 27.58, $SD = 8.49$). The younger participants were university students. The older participants were community-dwelling and recruited from charities, and social organisations.³ There were demographic differences between the samples which may have affected the results but it was not possible to statistically control these as while the older adults were slightly above average income and from higher level occupations these data were not collected from the students as they had yet to enter the world of work.

A sample size calculation was computed and demonstrated that a sample of 33 in each group was required to detect a mean difference amounting to medium to large effect size ($d = 0.7$; power = 0.80; alpha error = 5%; one tailed).

This study was approved by the University of Hertfordshire Ethics Committee.

Measures

Measures of repressive coping, mental health and well-being. The *Spielberger State–Trait Anxiety Inventory* (STAI – Spielberger, Gorsuch & Lushene, 1983) comprises self-report scales measuring state and trait anxiety. This study only used the trait anxiety scale. The scale consists of 20 items (scored on a four-point rating scale ranging from 1 almost never, to 4 almost always). Scores range from 20 to 80, with higher scores indicating greater anxiety. It includes items such as ‘I am inclined to take things hard’ and ‘I am content,’ which assessed participants’ general tendency towards feeling anxious. Measures of internal consistency range from .86 to .95 (Spielberger et al., 1983).

The Marlowe–Crowne (MC) Social Desirability Scale (Crowne & Marlowe, 1964) is a 33-item measure of socially desirable responding. However, Crowne and Marlowe (1964) suggest it may more accurately measure the tendency to be defensive. Participants circle ‘true’ or ‘false’ for each statement indicating their agreement. Scores range from 0 to 33, with higher scores indicating a greater need to present oneself in a favourable light. Items include ‘I have never intensely disliked someone’ and ‘I’m always willing to admit it when I make a mistake.’ Studies have shown it to be reliable .88 (Crowne & Marlowe, 1960).

The General Health Questionnaire (GHQ12 – Goldberg & Williams, 1988) is a 12-item measure asking participants about their general level of happiness, depression, anxiety and sleep disturbance over the last 4 weeks. Items are rated on a four-point scale (0 – less than usual; 1 – no more than usual; 2 – rather more than usual; 3 – much more than usual). Scores range from 0 to 36. Higher scores indicate greater psychological distress. Items include

ratings of ‘loss of sleep over worry’ and ‘felt you couldn’t overcome your difficulties.’ Studies examining its reliability have consistently shown it to be reliable in the range 83–95 for the area under the receiver operating characteristic (ROC) curve (Goldberg et al., 1997).

Measures of mental control. The *White Bear Suppression Inventory* (WBSI – Wegner & Zanakos, 1994) is a 15-item questionnaire measuring an individual’s use of thought suppression in everyday life. Each statement is rated on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree). Scores range from 15 to 75 with higher scores indicating greater use of thought suppression. Items include ‘I wish I could stop thinking of certain things’ and ‘I always try and put problems out of mind.’ The scale is reliable with values ranging from .87 to .89 (Wegner & Zanakos, 1994).

The Thought Control Questionnaire (TCQ – Wells & Davies, 1994) assesses participants’ general use of five different thought control strategies: distraction, worry, punishment, reappraisal and social means of control. The scale contains 30 statements. Rating is on a four-point scale ranging from 1 (almost never) to 4 (almost always). A total TCQ score (ranging from 30 to 120) is computed by summing subscales. Higher scores indicate a greater use of a variety of thought control strategies. Example items include ‘I tell myself not to be so stupid’ or ‘I replace the thought with a more trivial bad thought.’ Studies indicate the scale to be reliable with a coefficient of .83 (Wells & Davies, 1994).

Procedure

Participants completed the questionnaires in the order that they appear in the ‘Materials’ section. This information was generally obtained through participants taking the packs away to complete and return via post. However, some participants chose to take part at the university in an experimental cubical with the researcher. On average it took participants between 30 minutes and 1 hour to complete the questionnaires.

The classification of repressive copers. Repressors were classified using the same criteria as Erskine, Kvavilashvili, Conway, and Myers (2007). Thus, participants were classified as repressive copers if they scored on or below the young sample’s lower quartile (36.50) on anxiety and on or above the young sample’s upper quartile (21) on the MC scale. We compared this to the quartile values previously employed by Erskine, Kvavilashvili, Conway, and Myers (2007), i.e. 36 or below on trait anxiety and 19 or above on the MC scale, but the classification of repressive copers did not change significantly.

Results and discussion

The mean scores on the inventories for younger and older groups were compared using one-way Analysis of variance (ANOVA). Results indicated that older adults had significantly lower scores on trait anxiety ($p < .01$), the GHQ ($p < .001$), thought suppression ($p < .001$) and

TCQ subscales for reappraisal and worry ($p < .05$ in both cases), indicating better mental health than younger adults. Yet, older adults scored significantly higher than younger adults on the MC scale ($p < .05$). This pattern of low scores on anxiety and high scores on the MC scale is indicative of greater repressiveness.

On examining prevalence of repressive coping in the younger and older adult samples, 4 participants (12.1%) in the young sample were classified as repressive copers compared to 10 participants (30.3%) in the older adults. A chi-squared test indicated that this relationship between age and repressive coping was significant $\chi^2 = 3.26$, $df = 1$, $p = .035$, one tailed. Using the quartile values previously employed by Erskine, Kvavilashvili, Conway, and Myers (2007), 15.2% of the younger adults were classified as repressive copers compared to 33.33% of the older adults. Therefore, Study 1 replicated and extended the main findings of Erskine, Kvavilashvili, Conway, and Myers (2007) in a new community-dwelling sample of older and younger adults.

Finally, this study also examined the mean scores for older repressors and older non-repressors on the questionnaires used. In addition to significant differences on trait anxiety and the MC scale, older repressors had significantly lower scores on the WBSI suggesting less use of thought suppression which has previously been linked to psychopathology (Erskine, Kvavilashvili, & Kornbrot, 2007; Magee, Harden, & Teachman, 2012; Purdon, 1999). Repressors also showed a trend towards lower scores on the TCQ worry subscale possibly demonstrating less use of worry to control intrusive thoughts. Although this effect was marginally significant ($p = .07$) it explained 10% of the variance which according to Cohen (1977), corresponds to a medium to large effect. Thus, Study 1 suggests that older adults have a higher prevalence of repressive coping and this is linked to better indicators of mental health, as assessed by WBSI and TCQ worry subscale.

Study 2

One question not addressed in Study 1 was the extent to which the change in prevalence rates of repressive coping was evidence of developmental progression rather than a cohort effect. One issue with the majority of previous studies in this area is the use of cross-sectional data comparing adults across the lifespan from different cohorts. Importantly, no previous study has examined the prevalence of repressive coping in old age using a longitudinal design, and how this relates to mental health. Therefore, Study 2 conducted a longitudinal follow-up study in 2009 on the sample of older adults who were previously tested in 2002 by Erskine, Kvavilashvili, Conway, and Myers (2007). If the prevalence of repressive coping does not continue to rise over the 7-year period this would support a cohort effect. Furthermore, participants would show stability in trait anxiety and social desirability scores across the 7-year period. In addition, the majority of participants should not change their original repressor/non-repressor status. Therefore, we predicted that only a small percentage of participants (10%–20%) might be expected to

cross the category borders in both directions due to random fluctuations in the scores. If however, increased repressive coping with age represents a developmental change, we would expect that participants' social desirability scores will increase and trait anxiety scores will decrease, over the 7-year period. In addition, given these changes, the percentage of repressive copers should increase and the probability of becoming a repressive copers after being non-repressor in 2002 should be higher than the probability of becoming non-repressor after being a repressor in 2002. In addition, Study 2 also examined the relationship between mental health, personality and changes in repressive coping status over time. Therefore, participants' scores on depression, happiness, unhappiness, neutrality, rumination, thought avoidance and schizotypal personality were measured.

Method

Participants

Packs containing 10 inventories were sent out to the same 65 older adults (Time 2, 2009) who previously took part in 2002 (Time 1, see Erskine, Kvavilashvili, Conway, & Myers, 2007). Thirty-nine participants (22 males, 17 females) returned completed questionnaires. From the other 26 participants who did not take part: 5 had died, 2 could not be contacted, 1 reported being too ill to participate and 18 chose not to take part. The mean age of participants taking part was 80.05 years ($SD = 6.27$). Once again this older sample reported slightly higher than average incomes due to their demographic location and higher level occupations.

As 39 of the original 65 participants responded at Time 2, between-subjects ANOVAs were used to examine any systematic differences in Time 1 scores between participants responding at Time 2 and those who did not take part, but had originally taken part at Time 1. Results indicated no significant differences between the two groups on any of the inventories or subscales at Time 1 ($t < 1$). Most importantly, the groups also did not differ in the percentage of participants classified as repressors in 2002. Thus there were 41% repressors in the sample who later decided to take part in 2009 compared to 41.7% in the sample who later did not take part. There were also no significant differences among the occupations or ages of those taking part at Time 2 and those not taking part. The gender breakdown was also similar with 51% males in the sample at Time 1 and 56% males at Time 2. A power calculation using GPower suggested that we required a sample of between 34 and 45 participants to detect a medium effect size setting alpha at .05, power at .80 and effect size between .4 and .35 (Faul, Erdfelder, Buchner, & Lang, 2009).

This study was approved by the University of Hertfordshire Ethics Committee.

Materials

All participants completed the same set of questionnaires they had previously completed in 2002. These were:

Measures assessing repressive coping. The *Spielberger Trait Anxiety Inventory* (STAI – Spielberger et al., 1983) and *Marlowe–Crowne (MC) Social Desirability Scale* (Crowne & Marlowe, 1964), see the ‘Method’ section of Study 1.

Measures of mental control. The *White Bear Suppression Inventory* (WBSI – Wegner & Zanakos, 1994) and *Thought Control Questionnaire* (TCQ – Wells & Davies, 1994), see the ‘Method’ section of Study 1.

Measures of psychopathology/well-being. The *Beck Depression Inventory* (BDI – Beck, Rush, Shaw, & Emery, 1979) measures participants’ level of depression. This study used the 13-item short form. Participants are asked to read statements and circle any that they feel apply to them. Scores range from 0 to 39 with higher scores indicating greater depression. Items include ‘I am dissatisfied with everything’ or ‘I am not particularly dissatisfied.’ Studies indicate the BDI to be reliable with coefficients ranging from .81 to .86 (Beck, Steer, & Carbin, 1988).

The *Eysenck Personality Questionnaire* (EPQ-R – Eysenck et al., 1985) measures the three personality dimensions of introversion/extraversion, neuroticism and psychoticism. It also contains a lie subscale which was not used in this study. The short form containing 48 items was used in this study. A yes/no response format is used throughout, with each subscale scored out of a possible 12. Items include ‘does your mood often go up and down?’ and ‘do other people think of you as being very lively?’ Studies indicate the scale to be reliable with coefficients ranging from .68 to .88 (Eysenck et al., 1985).

The *Schizotypal Personality Questionnaire* (SPQ – Raine, 1991) is a scale assessing schizotypal personality with 74 items. Responses are yes or no, with participants receiving a numerical value of 1 for each yes answer. Higher values on the overall score of the SPQ indicate a greater tendency towards schizotypal personality. Three subscales are derived measuring (1) cognitive perceptual deficits, (2) interpersonal deficits and (3) disorganisation. The scale contains items such as ‘do you sometimes feel that things you see on the TV or read in the newspaper have a special meaning for you?’ or ‘I often feel that others have it in for me.’ Studies indicate reliability coefficients ranging from .63 to .75 (Raine, 1991).

Fordyce Happiness Index (Fordyce, 1988) requires participants to rate the percentage of time they usually feel happy, unhappy and neutral, with the constraint that the percentages must total 100%.

Rumination Inventory (McIntosh & Martin, 1992) assesses participants’ level of rumination or experience of repetitive uncontrollable thoughts and contains 10 items. Ratings are made on a seven-point scale anchored at 1 = ‘does not describe me well’ and 7 = ‘describes me well.’ Scores range from 10 to 70, with higher scores showing greater rumination. Items include ‘I have no trouble focusing all of my attention on one thing.’ Studies have indicated the scale is reliable (see McIntosh & Martin, 1992).

Procedure

The study was introduced as a 7-year follow-up of the previous study (2002) assessing personality and thought control ability. Participants were initially contacted by post and sent questionnaire packs containing the inventories described in the ‘Materials’ section. Participants who chose to take part mailed the completed inventories back to the experimenter. On completion, participants were debriefed and paid £10 for their participation.

Classification of repressive copers. As the study was a longitudinal 7-year follow-up of a pre-existing sample, the same classification criteria for repressive coping were used (Erskine, Kvavilashvili, Conway, & Myers, 2007). Thus, participants were classified as repressive copers if they scored ≤ 36 on the trait anxiety inventory and ≥ 19 on the MC scale.

Results and discussion

Change in the prevalence of repressive coping with age

Given that repressive coping is characterised by low anxiety scores and high social desirability scores, the first analysis examined the change in these scores as a function of time – see Table 1 (Time 1 in 2002 vs. Time 2 in 2009). One-way within-subjects ANOVAs showed that while mean MC scores significantly increased from 19.77 at Time 1 to 21.64 at Time 2 ($p = .01$), trait anxiety scores remained stable over time with the mean of 33.49 at Time 1 and 34.00 at Time 2 ($p = .66$). This pattern of findings suggests that the prevalence of repressive coping has increased between Time 1 and Time 2. Indeed, at Time 1, 16 out of 39 (or 41%) of the sample were repressive copers. When these same 39 participants were examined at Time 2, 22 out of 39 were repressive copers (56.4%), which demonstrates a greater than 15% increase in repressive coping.

To examine the change in the prevalence of repressive coping over the 7-year period, we examined percentages of participants who did and did not change their repressive status from Time 1 to Time 2. A total of 27 participants (69%) did not change their status from Time 1 to Time 2 (14 non-repressors, 13 repressors). However, nine participants (23%) who were non-repressors at Time 1 became repressors at Time 2. In contrast, only three participants (8%) who were repressors at Time 1 became non-repressors at Time 2. These percentages were compared to the percentages predicted by the null hypothesis, which assumes that the majority of participants (90%) would remain in the same category and only a small minority of participants would change category due to chance fluctuations in their anxiety and social desirability scores (5% in both directions). A goodness-of-fit test showed that the actual data were different to our predicted data, $\chi^2 = 26.83$, $df = 2$, $p = .0001$. Examination of the residuals showed that the non-repressor group did not differ from the predicted frequency, but for the group that stayed the same status and for participants who became repressors, there were differences from predictions. This

Table 1. Study 2 – mean scores on questionnaires at Time 1 (2002) and Time 2 (2009) and the results of within-subjects ANOVAs.

	Time 1 (2002)	SD	N	Time 2 (2009)	SD	N	F-value	η^2
Trait anxiety	33.49	6.88	39	34.00	6.91	39	.19	.005
Marlowe–Crowne	19.77	4.81	39	21.64	5.19	39	7.84**	.17
EPQ-P	2.00	2.25	37	1.70	1.31	37	.69	.02
EPQ-N	3.76	3.24	37	2.70	2.13	37	3.85* $p = .058$.10
EPQ-E	5.84	3.56	37	5.62	3.59	37	.53	.01
Unhappy	13.03	10.40	39	11.28	11.28	39	.87	.02
Happy	58.77	23.18	39	60.64	24.28	39	.26	.007
Neutral	27.69	23.32	39	28.08	20.69	39	.01	.000
BDI	3.21	2.51	38	3.47	2.73	38	.65	.02
WBSI	41.74	9.94	39	39.59	9.74	39	1.68	.04
TCQ distraction	16.00	4.06	36	16.86	3.77	36	1.87	.05
TCQ punishment	9.25	2.14	36	9.67	2.27	37	1.00	.03
TCQ reappraisal	12.36	3.40	36	11.86	3.00	36	.68	.02
TCQ worry	9.36	2.39	36	9.86	2.26	36	1.80	.05
TCQ social	9.42	3.08	36	10.11	3.31	36	1.93	.05
Rumination	42.03	9.57	36	37.64	9.71	36	8.33***	.19
SPQ total	13.24	7.37	37	13.57	7.92	37	.11	.003

Note: EPQ-P = Eysenck Personality Questionnaire psychoticism; EPQ-N = Eysenck Personality Questionnaire neuroticism; EPQ-E = Eysenck Personality Questionnaire extraversion; EPQ-L = Eysenck Personality Questionnaire lie scale; WBSI = White Bear Suppression Inventory; TCQ = Thought Control Questionnaire; SPQ total = Schizotypal Personality Questionnaire total.

* = significant at $p < .05$.

** = significant at $p < .01$.

*** = significant at $p < .001$.

demonstrated that the changes in status found from non-repressors to repressors were not by chance.⁴ Finally, of those 23 participants who were non-repressors at Time 1, probability of becoming a repressor at Time 2 was .39 (9/23). In contrast, out of those 16 participants who were repressors at Time 1, the probability of becoming non-repressor at Time 2 was .19 (3/16). The difference between these probabilities $p_1 - p_2 = .20$ was approaching significance ($p = .07$).

Changes in other variables with ageing

Gender was investigated in all statistical comparisons but as it never demonstrated any significant main or interactional effects it was omitted from all results. Table 1 shows the mean change from Time 1 to Time 2 on all variables collected. While the general picture is of stability over time, Table 1 shows that the mean rumination scores decreased from 42.03 at Time 1 to 37.64 at Time 2. In terms of personality changes over time, the only marginally significant effect was for trait neuroticism ($p = .058$) with mean neuroticism decreasing from 3.76 (SD = 3.24) at Time 1 to 2.70 (SD = 2.13) at Time 2.

Does increasing repressive coping convey mental health advantages?

To investigate whether repressive status conveyed a mental health advantage (as shown by indicators of mental health and relevant personality dimensions) for older adults, participants' scores on the inventories were

examined by repression status. Table 2 shows that older repressors scored significantly lower on neuroticism and unhappiness, and reported using fewer social methods of thought control. Furthermore, repressors reported being significantly happier than non-repressors. Non-repressors also demonstrated a borderline trend ($p = .07$) towards having higher WBSI scores than repressors.

The next analysis sought to examine the change in scores on the inventories administered to 17 participants classified as non-repressors at Time 2. Results indicated a remarkable degree of consistency over the 7-year period. Indeed none of the scores significantly changed from Time 1 to Time 2. The only variable to show even a trend towards changing was rumination ($p = .09$).

In contrast, the 22 participants classified as repressors at Time 2 did show significant reductions in neuroticism and rumination over time. In addition, repressors show significant increases in their MC scores. Thus, in contrast to non-repressors the reductions in neuroticism seen in older repressors suggest that this facet of personality continues to change with age in older repressive copers.

The results were also analysed using regression models where BDI scores at Time 2 were the dependent variable (a proxy for general mental health) and Time 1 BDI scores were the predictor. Separate models examined participants who were repressive copers at Time 1 and Time 2, those who were non-repressors at both times and those who changed status in both directions (i.e. became repressive copers or became non-repressors). Results indicated that for participants who were and remained repressive copers Time 1 BDI scores significantly predicted Time 2

Table 2. Study 2 – mean scores on the questionnaires in older repressors ($n = 22$) and older non-repressors ($n = 17$) at Time 2 (2009) and the results of ANOVAs.

	Repressor	SD	Non-repressor	SD	F-value	η^2
Trait anxiety	29.91	4.78	39.29	5.55	32.17***	.47
Marlowe–Crowne	23.41	3.40	19.35	6.23	6.75**	.15
EPQ-P	1.86	1.39	1.47	1.18	.83	.02
EPQ-N	1.81	1.78	3.65	2.18	8.21**	.19
EPQ-E	5.71	4.17	5.88	3.12	.02	.001
Unhappy	7.05	7.01	16.76	13.46	8.53**	.19
Happy	68.41	24.22	50.59	20.98	5.82*	.14
Neutral	24.55	22.57	32.65	17.60	1.49	.04
BDI	2.86	2.03	4.29	3.26	1.68	.04
WBSI	37.09	10.29	42.82	8.16	3.55 t	.09
TCQ distraction	17.33	4.27	16.88	3.37	.13	.003
TCQ punishment	9.24	2.30	10.06	2.11	1.29	.04
TCQ reappraisal	11.71	4.06	12.41	2.45	.391	.01
TCQ worry	9.14	2.37	10.35	2.15	2.66	.07
TCQ social	8.67	2.52	11.35	3.79	6.85**	.16
Rumination	35.86	10.85	40.50	7.40	2.16	.06
SPQ total	12.24	8.04	14.41	8.19	.65	.02

Note: EPQ-P = Eysenck Personality Questionnaire psychoticism; EPQ-N = Eysenck Personality Questionnaire neuroticism; EPQ-E = Eysenck Personality Questionnaire extraversion; EPQ-L = Eysenck Personality Questionnaire lie scale; WBSI = White Bear Suppression Inventory; TCQ = Thought Control Questionnaire; SPQ total = Schizotypal Personality Questionnaire total.

t = trend $p < .10$.

* = significant at $p < .05$.

** = significant at $p < .01$.

*** = significant at $p < .001$.

BDI scores. The same was true for participants who were non-repressors at Time 1 and became repressors at Time 2. However, for those who were non-repressors at both Time 1 and Time 2 or became non-repressors at Time 2, their Time 1 BDI scores did not predict their Time 2 scores significantly. Identical findings resulted when participants' happiness scores were examined.

General discussion

The main objective of this paper was to examine a novel hypothesis proposed by Erskine, Kvavilashvili, Conway, and Myers (2007) that repressive coping may increase with age. This was examined both cross-sectionally in a sample of community-dwelling older and younger adults (Study 1) and longitudinally in a sample of older adults over a 7-year interval (Study 2).

Study 1 replicated and extended the previous findings of Erskine, Kvavilashvili, Conway, and Myers (2007) by showing a significantly greater prevalence of repressive coping in a sample of older adults compared to younger adults. The older adults were psychologically healthier than the younger sample. Furthermore, the results indicated that older repressors in contrast to older non-repressors showed better indicators of mental health as demonstrated by their lower use of thought suppression (WBSI scores). The use of thought suppression has been previously linked to multiple psychopathologies such as anxiety, depression and propensity to obsession (Erskine, Kvavilashvili & Kornbrot, 2007; Magee et al., 2012; Najmi, & Wegner, 2008; Purdon, 1999; Wegner & Zanakos, 1994). However, being cross-sectional this study

could not address whether the difference in the prevalence of repressive coping is best viewed as a cohort effect or a longitudinal progression.

Study 2 was designed to examine the progression of repressive coping over time by re-testing Erskine, Kvavilashvili, Conway, and Myers' (2007) original sample of older adults after 7 years. Despite only 60% ($N = 39$) of the original sample being re-tested, the analysis demonstrated that there were no systematic biases in the participants who took part compared to those who did not at Time 2. At Time 2 the older adults were still remarkably psychologically healthy as indexed by lower scores on most of the indices of psychopathology and good scores on measures of well-being. Critically, the rate of repressive coping had risen from 16 participants (41%) at Time 1 to 22 participants (56.4%) at Time 2, further analysis demonstrated that this change was of borderline significance ($p = .07$). Despite this borderline result, the directional hypothesis and greater than 15% increase in repressive coping status support developmental progression rather than a cohort effect. In addition, participants' MC scores continued to rise significantly across the 7-year period. Further analysis on a case-by-case basis demonstrated that the shifts from non-repressor to repressor documented in nine participants over the 7-year period were due to large, rather than small changes in trait anxiety or MC scores. Further follow-up analysis demonstrated significant mental health advantages for the older repressive copers compared to the older non-repressors at Time 2. Older Time 2 repressors scored lower than older Time 2 non-repressors on trait anxiety, neuroticism, unhappiness and social methods of thought control. In

addition, they demonstrated greater happiness and higher MC scores. The results of Study 2, therefore, suggest that the increased prevalence of repressive coping reported in two separate samples of community-dwelling older adults (Erskine, Kvavilashvili, Conway, & Myers, 2007, and Study 1 here) represent developmental shifts rather than cohort effects. However, a remaining question is the extent to which the findings reported here will generalise to other samples of older adults. Importantly when the results were examined using regression models predicting Time 2 BDI and happiness scores from Time 1 scores significant prediction models were only evident in participants who were repressors at Time 2.

Studies reporting reductions in anxiety, depression and neuroticism with advancing age (Charles et al., 2001; Jorm, 2000; Soubelet & Salthouse, 2011; Srivastava et al., 2003), alongside those demonstrating positive correlations between age and MC scores (Carstensen & Cone, 1983; Dijkstra, Smit, & Comijs, 2001; Ray, 1988; Soubelet & Salthouse, 2011) suggest repressive coping must increase with ageing. If this pattern is generally true of older adults, then the prevalence of repressive coping would have to rise in older adults. Furthermore, Study 2 demonstrates developmental progression evidenced by higher rates of repressive coping between the mean ages of 73 and 80 years.

It is important to acknowledge that the increased repressive coping seen in older adults is linked to increased happiness and reduced unhappiness. We believe that the current findings can partly explain both the reported drop in the prevalence of anxiety and depression in older adults, but also the positivity effect often reported in older adults whereby they show rapid avoidance of negative and threatening information including memories (Carstensen, 2006; Schlagman, Kliegel, Schulz, & Kvavilashvili, 2009). Furthermore, one study has shown that older adults may be more successful at thought suppression, suffering less intrusions than younger adults (Lambert, Smyth, Beadel, & Teachman, 2013). If individuals become more repressive with age this may explain the reduction in intrusive thoughts (Lambert et al., 2013). It is also conceivable that there is an alternative explanation, that increasing repressive coping may be a consequence of the positivity effect. The argument may depend on whether attending away from negative information is conceptually equivalent to bias towards the positive, and if negative and positive are viewed as a continuum rather than orthogonal. However the present findings demonstrate that if one examines only non-repressive copers, they show no increase in positivity with advancing age and therefore no positivity effect. The current study considers the link between repressive coping and positivity. Future studies may seek to address the direction of causality between the two.

A study by Soubelet and Salthouse (2011) examined the relationship between social desirability, age, psychopathology and personality in a large sample of adults. The results demonstrated that older adults showed reductions in negative affect and neuroticism while showing greater satisfaction with life. However, as in the present study, social desirability was positively related to age. The

authors, therefore, re-examined the relations between age, psychopathology and personality while controlling for the influence of social desirability. Importantly, when controlling for social desirability the relationships between age, reductions in negative affect, neuroticism and greater positivity were greatly reduced, but not completely eliminated. The authors argue that these results have two potential explanations. One explanation is that social desirability measures response bias and therefore controlling for its influence results in a truer picture of the actual relations. An alternative explanation that we favour is that social desirability itself is a dimension that measures an important disposition and is not merely a bias towards desirable responding. This view has a long history and indeed debate over which explanation is more accurate continues to date (Nicholson, & Hogan, 1990; Smith & Ellingson, 2002; Soubelet & Salthouse, 2011; Thomsen, Mehlsen, Viidik, Sommerlund, & Zachariae, 2005). However, it is our contention that social desirability is only one component of the dimension underlying these interesting effects. In line with Weinberger and colleagues' research (Weinberger, 1990; Weinberger et al., 1979) we argue the other component is reduced trait anxiety and that taken together the two measure a repressive coping orientation that is meaningful and is psychologically protective and appears to increase with advancing age.

Another important issue concerning the present data for Study 2 is that while general changes over time were apparent in the whole sample, it was the group of repressive copers' scores that were reflected in the overall data. Thus when one examines the changes over time for repressors evidence of several changes is found, notably reduction in neuroticism and rumination. However, changes were not found in the non-repressors, indicating that personality and indicators of psychopathology were stable over time. This pattern of no change over time using similar scales has been previously reported by Costa et al. (1987). This suggests a high degree of consistency in personality, health and well-being among non-repressors between the ages of 73 and 80.

However, several important unanswered questions remain. If repressive coping increases across the lifespan when does it start to increase and what prompts its rise? In relation to the present Study 2, it is clear that not all older adults are repressive copers or become repressive copers. At Time 2 just over 56% were repressive copers. Therefore, any theory needs to explain and investigate what causes some older adults to become repressors while others do not. Other important questions concern why repressive coping might increase with age. It is our contention that increases in repressive coping serve a psychologically protective function as one approaches the end of life. One possibility is that increased repressiveness is activated by traumatic life events, particularly the realisation that one's time to live may soon end, a realisation that can only increase with age as one experiences an increase in physical and chronic illnesses, the death of friends and family and reductions in living standards (Carter & Cook, 1995; Erskine, 2008; Webber, Porter, & Menec, 2010).

The present studies need to be viewed with some caution due to their small sample sizes and the fact that the participants were of slightly higher average income. The results also need to be interpreted in light of the fact that due to the data collected, this study could not control for educational level, income and whether they were currently in a partnership or not. Having said this, it is now important that studies of older adults begin to examine the effects of repressive coping on ageing. If it is generally the case that an increasing proportion of the population becomes repressive copers with age, we need to understand how this interacts with both physical and mental health but also with the life circumstances older adults find themselves in. Future studies need to examine the positivity effect in old age and distinguish between repressors and non-repressors as positivity effects may be much stronger in repressors, or indeed may only occur in repressors. The current work suggests that this neglected dimension of older adulthood may lead to significant advances in knowledge about this vital life phase.

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Notes

1. For the purpose of this article we define thought suppression as the conscious and wilful suppression of thoughts one does not wish to have (Wegner, Schneider, Carter, & White, 1987) whereas repression/repressive coping is defined as the automatic and non-conscious avoidance of negative/threatening information (Myers, 2000).
2. One older adult who reported living in sheltered housing was retained.
3. This sample was previously reported by Leggett, Davies, Hiskey, and Erskine (2011).
4. Furthermore, we also examined a more conservative model where we expected 80% of participants to not change status and 10% to become repressors and 10% to become non-repressors. Importantly, even with these more conservative criteria the goodness-of-fit test was still significant, $\chi^2 = 7.02$, $df = 2$, $p = .03$. In addition, the examination of residuals showed that the percentage of non-repressors was not different from the predicted value but the groups that stayed the same or became repressors were.

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