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Abstract

Prospective memory (PM) can deteriorate with age and adversely influence health behaviours. Research suggests that personality is related to PM in healthy young adults, but we know little about the role of personality in the PM amongst older adults. Community-dwelling older adults (N=152) completed the NEO Five-Factor Inventory-3 and PM measures. After adjusting for demographics and general cognition, higher neuroticism and lower levels of openness were independently associated with lower objectively-measured time- and event-based PM. Lower conscientiousness was the only personality predictor of self-reported everyday PM failures. Findings indicate that personality plays a role in PM functioning in the laboratory and daily life.

Keywords: Big Five personality; Declarative memory; Memory for intentions; Ageing.

Prospective Memory (PM) is a complex, multi-determined cognitive process. Multiprocess Theory posits that PM requires cognitive processes ranging from highly strategic and executively demanding, to fully automatic. For example, time-based PM (e.g., taking medication at 7pm) has stronger strategic demands requiring active monitoring; event-based PM (e.g., taking medication with lunch) often has fewer strategic demands.

Some PM abilities typically decline with advancing age, which can adversely affect health behaviours, independent living (Woods, Weinborn, Velnoweth, Rooney, & Bucks, 2012), and quality of life (Woods, Weinborn, Li, Hodgson, Ng, & Bucks, 2015). In the laboratory, older (vs. younger) adults perform poorer on time-based and strategically demanding event-based PM tasks (Henry et al., 2004). Other aspects of PM are spared, including performance on relatively automatic event-based PM tasks. Interesting, older adults can outperform younger counterparts on naturalistic PM tasks outside of the laboratory, likely due to use of compensatory strategies, or even personality factors (Patton & Meit, 1993).

PM failures (e.g., forgetting to relay a message) are readily attributed to personality flaws (see Graf, 2012). So why might personality play a role in PM? Personality traits are enduring patterns in thinking, behaviour and affect. The most well-validated model is “The Big Five”: neuroticism, agreeableness, openness, conscientiousness, and extraversion (Costa & McCrea, 1990). One might predict for example, that high-conscientious individuals would be more likely to fulfil future intentions by employing greater vigilance, or using compensatory strategies. The literature also suggests possible neuroanatomical links between PM and personality, e.g., neuroticism and conscientiousness are both associated with the prefrontal cortex, which plays a key role in PM. Further, traits such as neuroticism are related to cognitive building blocks of PM, such as retrospective memory and executive functions (e.g., Murdock, Oddi, & Bridgett, 2013). In naturalistic studies, personality factors such as conscientiousness can affect medication adherence, which relies heavily on PM. Thus, personality may influence PM in the laboratory as well as everyday functions.

Uttl (2013) reviewed the small extant literature, providing a cogent framework for summarizing findings examining the personality-PM association in healthy adults: *In the laboratory*, there is evidence of small, but significant (*r*s ≤ .10) associations between event-based PM and personality, most notably greater conscientiousness and openness predicting better PM. *On naturalistic performance-based PM*, there were slightly larger, but still modest (*r*s .12-.21), associations between better PM and greater conscientiousness. Larger effect sizes were obtained evaluating the relationship between personality and *self-reported everyday PM failures*, particularly lower conscientiousness (*r*s .15-.50) and greater neuroticism (*r*s .08-.29). This suggests that some personality factors (e.g., conscientiousness, neuroticism, and openness) are modestly, but reliably associated with PM. Limitations of this literature include a primary focus on event-based PM, limited consideration of potential mediating factors (e.g., general cognition) and low statistical power due to small sample sizes and dichotomous, single-item PM measurement.

There has also been a primary focus on healthy young adults. Few have studied participants across the lifespan, specifically the relationship between PM and personality in older adults. This is important because age may modulate the relationship between PM and personality (Graf, 2012). In one of the few studies of personality and PM in older adults, Pearman and Storandt found that greater conscientiousness (r = .20), but not neuroticism (r = .08), was associated with better event-based PM (*M* age = 73 years). In another, Brom et al. (2014) found that conscientiousness was not significantly associated with a naturalistic, time-based PM task (r ~ .10) among older adults (*M* age = 68 years). In sum, there has been insufficient research focused on older adults to draw confident conclusions regarding the patterns of relationships between personality and PM as outlined by Uttl et al (2013) for younger adults.

Therefore, the present study aimed to systematically examine the relationship between Big-Five personality traits and PM, extending prior studies by: 1) comprehensively assessing performance-based and self-reported PM in a large, well-characterized sample of community-dwelling older adults; 2) including time- and event-based PM in the laboratory using continuous scale measurement; and 3) examining the specificity of the association between PM and personality, above and beyond general cognition and sociodemographic factors.

Method

This study was approved by the Edith Cowan University Human Research Ethics Committee. All participants provided written, informed consent.

Participants

The Western Australia Memory Study is an ongoing study of community-living adults that regularly undergo a battery of neuropsychological measures. 200 participants were due for re-assessment during the period of this study. Exclusion criteria were age < 50 (n=5), noncompletion of required measures (n=10), or dementia, uncontrolled depression, or other cognitively-relevant neurological/psychiatric conditions (n=16). We further excluded participants who performed >1.5 SD below normative age-and education standards (n=17) on the Montreal Cognitive Assessment (MoCA), a well-validated cognitive screening measure. This resulted in 48 exclusions and a final sample of 152 adults aged 50-89. Descriptive data are provided in supplemental materials.

Measures

Personality. The NEO Five-Factor Inventory-3 (NEO-FFI-3; McCrae & Costa, 2010) is a 60-item self-report measure of personality aligning with the Big Five model: Personality Trait (Cronbach's alpha obtained in the present sample): openness (α = .79) conscientiousness (α = .85), extraversion (α = .79), agreeableness (α = .73), and neuroticism (α = .83). Higher scores reflect stronger endorsement of that trait.

Prospective memory (PM).

Performance-based PM. The Western Australia Prospective Memory test (WAProm) is a laboratory-based PM measure structured similarly to the well-validated research version of the Memory for Intentions Screening Test (MIST; Raskin, 2004; Kamat, Weinborn, Kellogg, Bucks, Velnoweth, & Woods, 2014). It comprehensively assesses PM over 30 minutes by varying cue type (time- vs. event-based), ongoing task delay (5- vs. 15-min), and retrospective memory load (1 vs. 2-step intentions), using a standard word search as ongoing task. An example of a time-based item is "In 15 minutes [time], remind me to call the doctor". An example of an event-based item is "When I put away the spoon [event], remind me to pick up my nephew from school". A digital clock was placed behind participants, who could check the time as often as they wished. Eight of the 10 items score a maximum of two points (one point each for the correct response at the correct time/cue), the other two items have two responses each and therefore score a maximum of three points. Error types are coded for Prospective Memory (PM error = no response at the appropriate time or cue), Loss of Time (correct responses outside of the appropriate time range: $\pm$1 min for 5 minute cues, $\pm$2 min for 15 min cues), or Loss of Content response errors (recognition of appropriate cues, but no recall of the intention). For this study we used the standard time-based scale (range = 0-8) and a 4-item event-based scale with single intentions to parallel the time-based scale (range = 0-8). As these scales are each made up of pairs of five and 15-minute delay items, split-half reliabilities were calculated (Guttman = .66 for time-based and .70 for event-based). Evidence for the validity of this task includes significant correlations (Table 1) in the expected direction with age and general cognition. In addition, the larger WAMS battery included self- and informant-report versions of the Activities of Daily Living Questionnaire. Current findings with the WAProm replicated the commonly-found association between PM and everyday functions (Woods et al, 2012). Specifically, better time- (r=-.21, p=.01 for self; r=-23, p=.01 for informant) and event-based (r=-.19, p=.02 for self; r=-22, p=.02 for informant) PM were associated with fewer difficulties with instrumental activities of daily living.

PM failures in Daily Life. The Prospective and Retrospective Memory Questionnaire (PRMQ) contains 16 questions about everyday memory, including eight PM-specific complaints, for example; "Do you decide to do something in a few minutes' time and then forget to do it?"

Higher scores reflect more PM failures. Only the PM subscale (α = .89) was used in the present study.

Data Analysis

Pearson's correlations were used to describe the associations between *a priori* covariates (e.g., demographics, global cognition), PM scores, and NEO-FFI-3 variables. Hierarchical regressions examined the relationship between PM and NEO- FFI-3 subscales. Covariates (age, sex, education, and global cognition (MoCA)) were entered in the first step. NEO- FFI-3 variables were entered in the second step of the models to determine the unique variance that they explained in PM scores. Consistent with prior work on PM in older adults (Kamat et al., 2014), the event-based PM scale was non-normally distributed. Nevertheless, findings did not differ if non-parametric approaches were used, and distributions of residuals from the regressions approximated normality.

Results

Univariate Associations

Correlations between variables of interest are displayed in Table 1. Time-based PM demonstrated small, but significant correlations with neuroticism and openness (ps $\leq .05$). Specifically, poorer time-based PM was associated with higher neuroticism and lower openness, with small effect sizes (rs of -.19 and .21, respectively). Correlations between time-based PM and extroversion, agreeableness, and conscientiousness were non-significant. Better event-based PM was significantly associated with greater openness (r = .23, $p < .01$), but no other personality variables.

Larger and more widespread associations were observed between the PRMQ PM scale and the NEO- FFI-3. Specifically, greater PM failures were associated with higher neuroticism and lower levels of extraversion, conscientiousness, and agreeableness (ps $\leq .05$, rs ranged from .17 - .42).

Multivariate Models

Results of three planned hierarchical regressions are displayed in Table 2. The first examined the unique contribution of the five personality factors to time-based PM, after accounting for demographics and global cognition. Step 1 was significant, and explained 28% of the variance ($F(1,5) = 15.5$, $p < .001$), with age and global cognition as significant predictors (*p*s < .001). Adding the NEO- FFI-3 variables in step 2 explained an additional 4% (adjusted) of the variance (*F* change = 3.01, $p = .01$). Specifically, greater neuroticism and lower openness were unique predictors of poorer time-based PM (*p*s < .05).

In the second model, event-based PM was the criterion and the covariates were unchanged. The covariates explained 12% of the variance ($F(1,5) = 6.0$, $p < .001$) in step 1, which was again driven by age ($p < .01$) and global cognition. The NEO- FFI-3 was entered in step 2, producing a significant R^2 change ($F = 8.9$, $p < .001$), explaining an additional (adjusted) 5% of the variance. Greater neuroticism and lower openness were unique predictors of poorer event-based PM (*p*s < .05).

In the third model, self-reported PM failures were the criterion and the covariates remained unchanged. In step one, the covariates were not significant predictors of PM (Adjusted $R^2 = .00$, $F(1,5) = 1.2$, $p = .33$). Inclusion of the NEO- FFI-3 variables in step 2 explained 21% (adjusted) of the variance (*F* change = 8.9, $p < .001$). Only conscientiousness emerged as a significant independent predictor ($p < .001$), with greater conscientiousness predicting more PM failures.

Discussion

PM is a complex, multi-determined neurocognitive function that plays a key role in many activities of daily living and health behaviours. Prior research suggests that aspects of personality explain a small amount of variance in PM in healthy young adults. In this study, we demonstrate that specific aspects of personality may also contribute to PM functioning in older, community-dwelling adults, who commonly experience declines in the strategic aspects of PM that can interfere with independent living (e.g., Woods et al., 2012). Specifically, greater neuroticism and lower openness were associated with poorer time- and event-based PM performance in the laboratory, independent of demographics and general cognitive ability. The magnitude of the univariate associations between these personality factors and laboratory-based PM was generally quite modest (*r*s <.25), accounting for 4-5% of the variance in PM beyond *a priori* selected covariates, including age and global cognition. A different magnitude and pattern of associations was observed on the self-reported PM symptoms questionnaire. In univariate analyses, higher levels of neuroticism and lower levels conscientiousness, extraversion and agreeableness were all related to greater PM symptoms in daily life. Effect sizes ranged from small (*r*s $\leq$ .20) for extraversion and agreeableness, to moderate for neuroticism and conscientiousness (*rs* from .30-.42). However, conscientiousness emerged as the sole independent personality predictor in the multivariable analyses. Practical and conceptual implications are discussed below.

Greater neuroticism was associated with poorer PM at the univariate level across all three measures of PM (laboratory-assessed time- and event-based PM and self-reported everyday PM failures). Although neuroticism is characterized by heightened emotional reactivity and negative affect that may affect cognitive performance, we favour a neurocognitive interpretation of these findings. Neuroticism has been reliably linked to the structure and function of the prefrontal cortex and executive abilities (e.g., Chapman et al., 2017), which are also essential to PM. Thus our findings indirectly support the idea that neuroticism and PM share broadly similar underlying anatomical and cognitive architectures. Neuroticism is also characterized by impulsivity and disinhibition, which Kliegel's (2008) model of PM identifies as a key component of PM monitoring and cue detection. Although our study did not include measures of disinhibition to directly evaluate this construct as a mediator, our finer-grained analyses support this interpretation. Specifically, our findings suggested that laboratory-based failures in PM cue monitoring/detection drove the association with neuroticism. First, the effect sizes between neuroticism and PM were comparable across time- and event-based cues, suggesting that it is not simply task difficulty or level of strategic demands that drives the relationship. Second, post-hoc analyses showed that neuroticism was related to PM omission errors (i.e., not recognizing the cue) ($r = .21$, $p = .008$), but not time- or content-loss failures (*p*s > .10). Third, post-hoc analyses indicate that neuroticism was not related to the ongoing task during the PM test, nor to post-test recognition performance (*p*s > .10), suggesting that the association is not being driven by task engagement or encoding or retention of PM instructions. Finally, inclusion of the MoCA as a covariate in the multivariable model helps to rule out the possibility that the association between neuroticism and PM in the laboratory is an artefact of general cognition.

Conscientiousness emerged as the most important correlate of everyday PM failures. While neuroticism, extraversion, agreeableness and conscientiousness were all associated with everyday PM failures in univariate analyses, only conscientiousness survived a multivariable analysis that included important cofactors. This finding is consistent with those of Uttl et al. (2013), which showed moderate effects for conscientiousness on PM on self-report measures in younger adults. In contrast to the Uttl et al. (2013) review, conscientiousness was not significantly associated with PM performance in the laboratory; however, our observed time-based PM effect size ($r = .13$) is consistent with those findings. The association between conscientiousness and PM symptoms in daily life make good interpretive sense: conscientious individuals tend to be vigilant and take daily tasks seriously (Costa & McCrae, 1990). Thus they may be more likely to monitor their environment for PM cues and employ compensatory strategies (e.g., reminders), enabling them to minimize PM failures. It remains to be seen whether conscientiousness may mediate or moderate the reliably observed association between PM deficits and dependence in daily life (e.g., Woods et al., 2012). Perhaps interventions aimed at improving conscientiousness may enhance PM and have positive downstream effects on activities of daily living (English & Carstensen, 2014).

Openness was also independently related to laboratory-measured time- and event-based PM, but not everyday PM failures. It has been argued that openness is a frontally-mediated personality trait that relies on executive functions such as cognitive flexibility. Indeed, previous work has supported the relationship between openness and intellectual functioning in general (e.g., DeYoung, Peterson & Higgins, 2005). However, openness may play a particularly important role in PM, as successful performance requires flexibly shifting between the ongoing task and cue monitoring (Kliegel et al., 2008). While it is possible that our findings reflect the relationship of openness to general intellectual ability (e.g., Harris, 2004) rather than PM specifically, it is important to note that the relationship between openness and PM remained after controlling for general cognition.

This study has several limitations. The first is that self-reported PM should not be interpreted as PM ability per se. Instead, self-reported PM measures reflect the frequency and extent of PM failures in daily life outside the laboratory. Such measures can be biased by limited self-awareness, negative affect, and other factors. Indeed some have argued that these potential biases, and findings of weak or no relationships with laboratory-measured PM, suggest that self-report measures of PM are invalid (e.g., Uttl & KiBreab, 2011). However, self-reported PM failures have been found to consistently, reliably and independently predict poorer everyday functioning and health outcomes in older adults (e.g., Woods et al., 2012) and therefore we would argue that self-reported everyday PM failures remain worthy of study.

Second, our sample size, while reasonably large (*N*=152), was likely too small to detect very small associations between PM and aspects of personality. Thus, null findings must be cautiously interpreted and complemented by consideration of effect sizes. For instance, the effect sizes we observed between laboratory-based PM and extraversion (see Table 1) were comparable to those reported by Uttl et al. (2013). Finally, this study focused on relatively healthy community-dwelling older adults, and findings are not necessarily generalizable to other populations. Despite these limitations, our findings indicate that personality factors play at least a minor role in PM functioning in the laboratory and daily life, which may reflect shared reliance on prefrontal networks and executive functions.

Declaration of Conflicting Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Pre-registration

This study was not pre-registered.

Data sharing

A file with the data used in this paper is available under the corresponding authors name at:

http://www.library.uwa.edu.au/repository/repository_access

Author Contributions

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References

Brom, S. S., Schnitzspahn, K. M., Melzer, M., Hagner, F., Bernhard, A., & Kliegel, M. (2014). Fluid mechanics moderate the effect of implementation intentions on a health prospective memory task in older adults. *European Journal of Ageing : Social, Behavioural and Health Perspectives, 11*, 89-98. doi:10.1007/s10433-013-0288-2

Chapman, B. P., Benedict, R. H. B., Lin, F., Roy, S., Federoff, H. J., & Mapstone, M. (2017). Personality and performance in specific neurocognitive domains among older persons. *The American Journal of Geriatric Psychiatry : Official Journal of the American Association for Geriatric Psychiatry, 25*, 900-908. doi:10.1016/j.jagp.2017.03.006

Costa, P. T., & McCrae, R. R. (1990). Personality disorders and the Five-Factor Model of personality. *Journal of Personality Disorders, 4*, 362-371. doi:10.1521/pedi.1990.4.4.362

English, T., & Carstensen, L. L. (2014). Will interventions targeting conscientiousness improve aging outcomes? *Developmental Psychology, 50*, 1478-1481.

Graf, P. (2012). Prospective Memory: Faulty Brain, Flaky Person. *Canadian Psychology. Psychologie Canadienne, 53*, 7-13. doi:10.1037/a0026516

Harris, J. A. (2004). Measured intelligence, achievement, openness to experience, and creativity. *Personality and Individual Differences, 36*, 913-929. doi:10.1016/S0191-8869(03)0161-2

Henry, J. D., MacLeod, M. S., Phillips, L. H., & Crawford, J. R. (2004). A meta-analytic review of prospective memory and aging. *Psychology and Aging, 19*, 27-39. doi:10.1037/0882-7974.19.1.27

Kamat, R., Weinborn, M., Kellogg, E. J., Bucks, R. S., Velnoweth, A., & Woods, S. P. (2014). Construct validity of the Memory for Intentions Screening Test (MIST) in healthy older adults. *Assessment, 21*, 742-753. doi:10.1177/1073191114530774

Kliegel, M., Jäger, T., & Phillips, L. H. (2008). Adult Age Differences in Event-Based Prospective Memory: A Meta-Analysis on the Role of Focal Versus Nonfocal Cues. *Psychology and Aging, 23*, 203.

McCrae, R. R., Costa, P. T., & Inc., P. A. R. (2010). *NEO Five-Factor Inventory-3: NEO-FFI-3*. Lutz, FL: Psychological Assessment Resources.

Murdock, K. W., Oddi, K. B., & Bridgett, D. J. (2013). Cognitive correlates of personality: Links between executive functioning and the Big Five personality traits. *Journal of Individual Differences, 34*, 97-104.

Patton, G. W., & Meit, M. (1993). Effect of aging on prospective and incidental memory. *Experimental aging research, 19*, 165-176. doi:10.1080/03610739308253929

Pearman, A., & Storandt, M. (2005). Self-discipline and self-consciousness predict subjective memory in older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 60B*, P153-P157. doi:10.1093/geronb/60.3.P153

Raskin, S. (2004). Memory for intentions screening test [abstract]. *Journal of the International Neuropsychological Society, 10*, 110.

Uttl, B., White, C. A., Wong Gonzalez, D., McDouall, J., & Leonard, C. A. (2013). Prospective memory, personality, and individual differences. *Frontiers in Psychology, 4*, 130. doi:10.3389/fpsyg.2013.00130

Woods, S. P., Weinborn, M., Li, Y. R., Hodgson, E., Ng, A. R. J., & Bucks, R. S. (2015). Does prospective memory influence quality of life in community-dwelling older adults? *Aging, Neuropsychology, and Cognition, 22*, 679-692. doi:10.1080/13825585.2015.1027651

Woods, S. P., Weinborn, M., Maxwell, B. R., Gummery, A., Mo, K., Ng, A. R., & Bucks, R. S. (2014). Event-based prospective memory is independently associated with self-report of medication management in older adults. *Aging & Mental Health, 18*, 745-753. doi:10.1080/13607863.2013.875126

Woods, S. P., Weinborn, M., Velnoweth, A., Rooney, A., & Bucks, R. S. (2012). Memory for intentions is uniquely associated with instrumental activities of daily living in healthy older adults. *Journal of the International Neuropsychological Society, 18*, 134-138. doi:10.1017/S1355617711001263

Highlights:

- Prospective memory (PM) can deteriorate with age and adversely influence health behaviours. Research suggests that personality is related to PM in healthy young adults, but we know little about the role of personality in the PM amongst older adults.
- This study aimed to systematically examine the relationship between Big-Five personality traits and PM in a large, well-characterized sample of 152 community-dwelling older adults controlling for general cognition and sociodemographic factors.
- We found that higher levels of neuroticism and lower levels of openness were associated with poorer objectively measured PM in the laboratory, but that only greater conscientiousness was associated with fewer self-reported PM complaints in everyday life.
- Implications discussed included the potential benefits of interventions to alter maladaptive personal traits, such as interventions to increase conscientiousness.

Table 1. Pearson's correlations between demographics, cognition, negative affect, and

	Sex	Age	MoCA	Edu.	NEO-N	NEO-E	NEO-O	NEO-A	NEO-C	PMEB	PMTB	PRMQ
Sex	-	-.03	.31***	-.07	.14	.17*	.27**	.31***	.12	.11	.04	.04
Age		-	-.20*	-.07	-.08	-.02	-.07	.06	-.06	-.31***	-.43**	.12
MoCA			-	.22**	.00	.01	.18*	.08	-.03	.26**	.40***	-.05
Education				-	-.18*	-.01	.23**	-.14	-.06	.05	.16*	-.13
Personality												
NEO-N					-	-.29***	-.05	-.14	-.36***	-.16	-.19*	.30**
NEO-E						-	.23*	.16	.33***	.11	.13	-.20*
NEO-O							-	.03	.16	.23**	.21*	.02
NEO- A								-	.20*	.04	.05	-.17*
NEO-C									-	.04	.13	-.42***
PM												
WAProm												
Event										-	.58***	-.12
Time											-	-.09
PRMQ PM												-

personality in the study cohort (*N*= 152)

**$p \leq .01$; *$p \leq .05$ (2-tailed). MoCA = Montreal Cognitive Assessment. PM = prospective memory. PRMQ = Prospective and Retrospective Memory Questionnaire. N = neuroticism. E = extraversion. O = Openness. A = Agreeableness. C = conscientiousness. WAProm = Western Australia Prospective Memory Test. EB = event-based. TB = time-based.

Table 2. Hierarchical regression results of NEO-FFI-3 predicting prospective memory (PM), controlling for demographics and global cognition (*N*=152)

	Adj R2	*F*	ΔR^2	ΔF	*B*	*SE B*	β
Time-based PM							
Step 1	.28	15.5***	---				
Constant					11.5	1.9	
Age					-.11	.02	-.36***
MoCA					.74	.17	.34***
Education					.05	.06	.06
Sex					-.31	.33	-.07
Step 2	.32	---	.07	3.0*			
Constant					11.0	2.4	
Neuroticism					-.05	.02	-.17*
Extroversion					.02	.03	.04
Openness					.05	.03	.15*
Agreeableness					.02	.03	.04
Conscientiousness					.01	.02	.02
Event-based PM							
Step 1	.12	6.0***	---				
Constant					9.8	1.5	
Age					-.06	.02	-.27**
MoCA					.32	.14	.20*
Education					-.01	.05	-.01

Sex					.11	.26	.03
Step 2	.17	---	.08	2.9*			
Constant					11.1	1.9	
Neuroticism					-.05	.02	-.23*
Extraversion					.01	.02	.02
Openness					.05	.02	.21*
Agreeableness					.00	.02	.00
Conscientiousness					-.03	.02	-.11
<u>PRMQ PM</u>							
Step 1	.00	1.2	---				
Constant					15.2	5.3	
Age					.08	.06	.11
MoCA					-.09	.49	-.02
Education					-.23	.17	-.12
Sex					.43	.94	.04
Step 2	.21	---	.23	8.9***			
Constant					26.6	6.3	
Neuroticism					.07	.06	.11
Extraversion					-.06	.07	-.07
Openness					.10	.07	.12
Agreeableness					-.12	.08	-.12
Conscientiousness					-.29	.06	-.37***

Note: MoCA = Montreal Cognitive Assessment. PRMQ = Prospective and Retrospective Memory Questionnaire. ***$p < .001$