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Young Schema Questionnaire – Short Form Version 3 (YSQ-S3): Preliminary validation in older adults

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ABSTRACT

Objectives: The aim of the current study was to establish the reliability and validity of one of the most used schema questionnaires, Young Schema Questionnaire Short Form Version 3 (YSQ-S3) in older adults.

Method: 104 participants aged 60–84 years were recruited. They were administered a battery of questionnaires, including the YSQ-S3, Young-Atkinson Mode Inventory (YAMI), Germans (Personality) Screener, the Geriatric Depression Scale (GDS), The Geriatric Anxiety Inventory (GAI) and the Basic Psychological Needs Scale (BPNS). The YSQ-S3 was completed a second time by 83 participants a median of 12 days later.

Results: Satisfactory internal consistency reliability was found for 13 of the 18 early maladaptive schemas (EMS) of the YSQ-S3. Test-retest reliability was satisfactory for 17 of 18 EMS. Convergent validity was evident from significant correlations between the EMS of the YSQ-S3 and the vulnerable child and angry child schema modes from the YAMI. Congruent validity was evident from correlations of the majority of the EMS with the GDS, the GAI, German's (Personality) Screener and the BPNS measure.

Conclusions: By and large the YSQ-S3 demonstrates internal and test re-test reliability in as well as congruent and convergent validity, in older adults. This suggests the YSQ-S3 may be of use in work establishing the utility of schema therapy in this population, and that schema therapy with older people warrants further exploration. Notwithstanding this some re-development of some EMS items appears to be required for the YSQ-S3 to be more relevant to older people.

Introduction

Estimates of the prevalence of personality disorders (PD) in older adults vary greatly, from 2%–13% in the community up to 62% in psychiatric inpatients (Rosowsky & Molinari, 2014; Schuster, Hoertel, Le Strat, Manetti, & Limosin, 2013). The presence of at least one PD can lead to difficulties in long-term care settings (Himelick & Walsh, 2002), greater risk of suicidal ideation and treatment complications (Segal, Marty, Meyer, & Coolidge, 2012; van Alphen, Derksen, Sadavoy, & Rosowsky, 2012). In younger adults, personality disorders have been found to lead to greater health issues, such as obesity and diabetes (Frankenburg & Zanarini, 2006) and coronary heart disease (Pietrzak, Wagner, & Petry, 2007). This may also apply to older adults (Chen et al., 2009).

Despite the wide body of evidence concerning the importance of identifying and treating personality disorder in younger adults, comparatively little research has been done with older adults (Agronin & Maletta, 2000; Oltmanns & Balsis, 2011; Videler, van Royen, & van Alphen, 2012). Schema therapy (Young, 1990) has been established as an effective treatment for younger adults with borderline personality disorder (Giesen-Bloo et al., 2006; Sempértegui, Karreman, Arntz, & Bekker, 2013) and has shown promise with other personality disorder types (Bamelis, Evers, Spinhoven, & Arntz, 2014; Jacob & Arntz, 2013; Jovev & Jackson, 2004; Petrocelli, Glaser, Calhoun, & Campbell, 2001). Schema therapy is a type of psychotherapy which encompasses elements of CBT, attachment theory, Gestalt therapy and psychodynamic approaches (Young, Klosko, & Weishaar, 2003). It extends Beck's (1967) Cognitive Theory of depression by proposing that early belief patterns, known as 'early maladaptive schemas' (EMS) develop in early childhood, become rigid and inflexible over time and can lead to psychopathology. To date two studies have directly investigated the use of schema therapy to treat PDs in older adults. Videler, Rossi, Schoevaars, van der Feltz-Cornelis, and van Alphen (2014) evaluated the use of group schema therapy in older adults with personality disorder features and long-standing mood disorders. Symptomatic distress decreased significantly from pre to post-treatment. More recently, Videler, van Alphen, van Royen, van der Feltz-Cornelis, Rossi, and Arntz (2017) conducted a multiple baseline study of eight older adults with Cluster C personality disorders, finding significant reduction in personality disorder symptoms across one year of treatment.

The latest version of Young's schema model includes 18 proposed EMS, which are theorised to represent five broader schema domains (Young et al., 2003). Although results regarding these higher order domains are mixed (Kriston, Schäfer, Jacob, Härter, & Hölzel, 2013), these schema domains are thought to correspond to unmet needs in childhood relationships with significant others, due to experiences like child abuse, neglect or other adversity. The schemas are thought to

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be highly resistant to change (Oei & Baranoff, 2007). In the Videler et al. (2014) study with older adults mentioned above results suggested that schema change mediated changes in symptomatic distress for participants.

Schema are often identified using questionnaires. van Alphen et al. (2015) identified a need to cross-validate personality questionnaires that have been developed with younger populations due to unique characteristics of older adults. Both maladaptive and adaptive personality traits assessed by questionnaires may manifest differently in older age (Debast et al., 2014). For example, Balsis, Gleason, Woods, and Oltmanns (2007) found that 29% of the DSM-IV criteria for personality disorders were endorsed at different rates by older adults compared to their younger counterparts leading to the potential of over and underdiagnosis of personality disorders. Only one such validation study of a schema questionnaire in an aged population has been carried out. Pauwels et al. (2014) investigated the age neutrality of Young Schema Questionnaire, 2nd Edition – Long Form (YSQ2-LF: Young & Brown, 1994) in three age groups, one of which was older adults. Overall they found only 3% of questions demonstrated differential item function between the groups suggesting age neutrality. While this can be considered highly positive, the long form of the YSQ is of considerable length and so can prove challenging for aged populations, particularly those with cognitive impairments (Rossi, Van den Broeck, Dierckx, Segal, & van Alphen, 2014). The aim of the current study was to extend the research on schema questionnaires in older adults by establishing the internal consistency, test-re-test reliability and the convergent and congruent validity (Reber, 2009) of one of the most used schema questionnaires, Young Schema Questionnaire, Short Form (YSQ-S3) in this population.

Method

Participants

The participants were 104 older adults (54 males; 50 females). Participants were recruited from a pre-existing volunteer participant database of older adults in the community. The volunteer database was established by placing ads in local newspapers, approaching older adult education centres, placing flyers around the university and local community, and through snowball sampling. Volunteers were included in this database if they were aged 60 years or more and lived independently, and were excluded if they indicated that they would be unable to travel to the university. The sample from the database was selected based on time since last participation in one of our studies. We first invited those who had not participated for the longest, while also maintaining an equal balance of males and females.

Participants were reimbursed AUD$20 per hour for their participation in the study. Participants were eligible for the study if they were over the age of 60 years and lived independently; they were excluded if they had any significant history of a major neurological condition leading to cognitive impairment. All participants were screened using the Adenbrookes Cognitive Examination, Third Edition (ACE-III; Hsieh, Schubert, Hoon, Mioshi, & Hodges, 2013) and were excluded if they received an ACE-III score of 81 or less (Hsieh et al., 2015). Of the 104 older adults tested, five participants did not complete the ACE-III, and two participants had scores falling below the cut-off. These participants were therefore

Table 1. Demographic characteristics of the sample (n = 94).

	Community sample
Age (years)	
Mean (SD)	72.34 (5.93)
Range	60–84
Gender; n (%)	
Female	47 (50)
Male	47 (50)
High school education; n (%)	
Year 12	50 (53.2)
Year 11	7 (7.4)
Year 10	25 (26.6)
Year 9 or below	12 (12.8)
English background; n (%)	
English first language	83 (88.3)
English second language	11 (10.6)
Marital status; n (%)	
Single	10 (10.6)
Married	59 (62.8)
Divorced	11 (11.7)
Widowed	11 (11.7)
De Facto	1 (1.1)
In a relationship	2 (2.1)

excluded from the study. Of the remaining 97 participants, three were excluded due to a large proportion of missed items, resulting in 94 eligible participants. Amongst the remaining participants, the mean age was 72.3 years (age range 60–84 years). Demographic characteristics are summarised in Table 1. The sample is noted as being more highly educated than typical of this age group in Australia.

Measures

Demographic measures
Participants' age, marital status, education and language background were recorded.

Young Schema Questionnaire – Short Form   Version 3 (YSQ-S3)
The YSQ-S3 (Young, 2005) is a 90 item questionnaire designed to assess the 18 proposed EMS: emotional deprivation, abandonment, mistrust/abuse, social isolation, defectiveness/ shame, failure, incompetence/dependence, vulnerability to harm, enmeshment, subjugation, self-sacrifice, emotional inhibition, unrelenting standards, entitlement, insufficient self-control, admiration seeking, pessimism and self-punitiveness. Participants are asked to rate a series of statements based on how they have felt over the past year. Each of the items is rated on a 6 point scale (1 = *completely untrue of me*, 6 = *describes me perfectly*). Higher scores indicate higher levels of EMS.

The internal consistency of the Young Schema Questionnaire – Short Form (YSQ-SF), an earlier 75-item version of the YSQ, has been established in an Australian sample with all subscales exceeding 0.80 (Baranoff, Oei, Cho, & Kwon, 2006).

The YSQ-S3 itself has been subject to a number of studies investigating its psychometric properties. It has been found to have good internal consistency in both clinical and nonclinical participants in various languages (e.g, French; Hawke & Provencher, 2012; German; Kriston et al., 2013; Danish; Bach, Simonsen, Christoffersen, & Kriston, 2017). It has also been found to have good test-retest reliability (Calvete, Orue, & González-Diez, 2013). Factor analysis has generally found the 18 schemas structure to be supported, but results of a two-order schema structure incorporating broader schema

domains are more mixed (Bach et al., 2017; Calvete et al., 2013).

Young-Atkinson Mode Inventory

One or more EMS may function together to form schema modes. It follows EMS should be strongly related to these modes. The Young-Atkinson Mode Inventory (YAMI; Young, Atkinson, Arntz, Engels, & Weishaar, 2005) is a 187-item self-report instrument that investigates the presence of 10 of the proposed schema modes. To limit participant fatigue the current study used a subsection comprising of 45 items from the YAMI that compose the healthy adult, vulnerable child and angry child subscales. Cronbach's α of the YAMI ranges from 0.76 to 0.96 (Vreeswijk, Spinhoven, Eurelings−Bontekoe, & Broersen, 2014). The YAMI was used to consider the convergent validity of the YSQ-SF3.

Four questionnaires were used to assess the congruent validity of the YSQ-S3; The Geriatric Depression Scale, the Geriatric Anxiety Scale, the Germans Screener and the Basic Psychological Needs Scale.

Geriatric Depression Scale

The Geriatric Depression Scale (GDS; Yesavage et al., 1982) is a 30-item questionnaire that assesses for symptoms of depression in adults over the age of 60 years. It removes the somatic symptoms that may not be clinically relevant in an older sample. Participants rate items in a yes/no response format that represent how they have felt over the past week (e.g. *'Do you often feel helpless*?' or '*Is it hard for you to get started on new projects*?'). The GDS has been found to have a high degree internal consistency and test-retest and split half reliability in both a clinical and non-clinical sample (Yesavage et al., 1982).

Geriatric Anxiety Inventory

The Geriatric Anxiety Inventory (GAI; Pachana et al., 2007) is a 20-item self-report questionnaire that was developed to measure anxiety in adults over 60 years of age. Participants are asked to rate a series of statements (e.g. '*I worry a lot of the time*' or '*My own thoughts often make me anxious*') as either *agree* or *disagree*. The GAI has sound psychometric properties, with high internal consistency, test-retest reliability and adequate convergent validity in a non-clinical sample (Pachana et al., 2007).

Germans (Personality) Screener

The 'Germans' Screener (Germans, Van Heck, Masthoff, Trompenaars, & Hodiamont, 2010), is a set of 10 items developed from the Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II; First, Spitzer, Gibbon, & Williams, 1995). The 10-item screener has been found to correctly classify 78% of participants as having a personality disorder, and has good internal consistency and test-retest reliability. Items are rated with a yes/no response format (e.g. '*Do you often expect the worst in a situation*' or '*Do you avoid getting to know people unless certain they will like you*'). While not validated to date in older adults, the Germans screener's psychometric properties were considered acceptable for the purposes of the current study.

Basic Psychological Needs Scale

As schemas are thought to be linked to unmet needs (Young, 1990), the Basic Psychological Needs Scale (BPNS; General version) assesses for unmet needs in three areas, autonomy, competence and relatedness (Deci & Ryan, 2000; Gagné, 2003). The BPNS consists of 21 items, with responses scored on a 7-point Likert scale where responses range from; 1 = *not at all true* and 7 = *very true*, with regard to how well the respondent considers each need has been satisfied. Higher scores indicate higher needs satisfaction. Good internal reliability has been established for the BPNS (Gagné, 2003).

Procedure

The study received ethics approval from the University of Technology Sydney Human Research Ethics Review Committee and reciprocal approval from the Human Research Ethics Committee of Western Sydney University (approval numbers University of Technology Sydney, 2015000482-24 and Western Sydney University H11617). Participants from a pre-existing volunteer participant database were contacted and provided with information about the study over the telephone. The participant and researcher then met either one-on-one or in small groups to complete the questionnaires at Western Sydney University. Participants were also given the option to 'opt-in' for a mail-out questionnaire for an additional payment. This questionnaire consisted only of the YSQ-S3, and was mailed to participants with a postage-paid envelope, with instructions to mail back to the University of Technology Sydney. Out of 94 participants who were eligible at Time 1, 93 participants signed up for the postal questionnaire, of which 86 were returned. Of the 86 participants who submitted the follow-up questionnaire, 3 participants missed a full page of questions and were removed from the test-retest analysis. There were 11.6 days (range 4–34) on average between these completions. All participants were debriefed following completion of Time 1. No participants found the subject matter distressing. Figure 1 details the study procedure.

Statistical analysis

Out of 94 participants, there were overall 34 items missed on the YSQ-S3 (0.4%). In terms of the most missed schema, of the 33 missed items, 14 (41%) of them were missed on the enmeshment/underdeveloped self schema. There were a further 33 items missed on other questionnaires (YAMI; 4 items, GDS; 6, GAI; 2, Germans; 2, BPNS; 19). One participant missed the final page of the BPNS, so their responses were excluded for the BPNS variable. At Time 2, there were 9 items missed overall on the repeat administration of the YSQ-S3 amongst eligible participants.

Missing values were dealt with as recommended by Roderick and Little (1988). For scores that were part of a subscale, the score entered was an average of the remaining scores rounded to the nearest whole number. For items with a yes/no response format, these items were replaced with the average response to that item, rounded to the nearest whole number.

The study used Pearson correlation analyses to investigate the relationship between each of the 18 schemas of the YSQ-S3, with the three schema modes from the YAMI, the measures of psychological symptoms (depression, anxiety and dysfunctional personality) and the basic psychological needs scores. For the correlation tests, bootstrapped confidence intervals were calculated at 95% confidence by bootstrapping at 5000 samples. Pearson correlations were also conducted to identify the intercorrelations between the individual schemas.
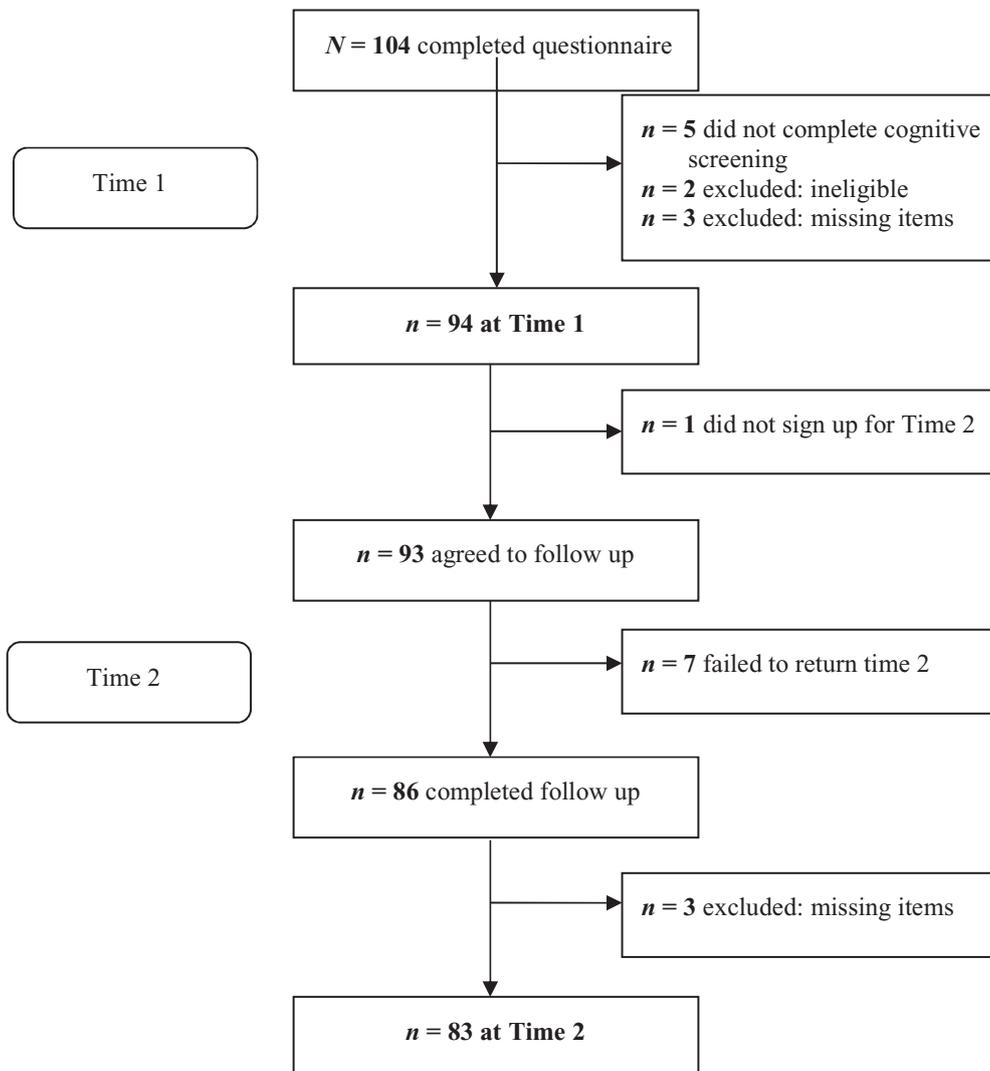
Figure 1. CONSORT flow chart.

To investigate the internal consistency of the schemas, Cronbach's alphas were calculated for each of the 18 subscales. Pearson correlations were also carried out to investigate the stability (test re-test reliability) of the schemas. In addition to this to describe test-retest reliability, intraclass correlation coefficients with 95% confidence intervals were calculated to measure absolute agreement and Bland-Altman plots (Bland & Altman, 2010) were calculated to measure relative agreement. All analyses were conducted using IBM SPSS Statistics package version 20.

The YSQ-S3 scales, as well as the YAMI, GDS, GAI, Germans and scales of the BPNS were found to meet acceptable parameters for the chosen statistical analysis.

Results

Descriptive statistics for all the items / scales used in the study are available in a supplementary file [Supplemental file 1]. In addition Tables with full confidence intervals for correlations is also available [Supplemental file 2, Supplemental file 3].

Reliability

Results of the reliability analysis can be seen in Table 2. Internal consistencies (Cronbach's α: Cronbach, 1951) were sufficient

(>0.70) in 13 of the 18 schemas according to the standards for internal consistency established by Nunally (1978). The remaining 5 schemas had less good reliability ($\alpha = 0.6 - 0.7$); dependence/incompetence, unrelenting standards, enmeshment/ underdeveloped self, entitlement/grandiosity, and insufficient self-control. The majority of item discriminations (corrected item-total correlations) exceeded the desirable 0.40 level, but all the minimum of .20 (Everitt & Skrondal, 2011). The results of the test-retest reliability analysis can also be found in Table 3. All Pearson correlations between measures at different time points were significant at the 0.01 level. For 17 of the 18 schemas, the test-retest value was above the acceptable level (>0.7). A remaining schema (enmeshment/undeveloped self) had less good test-retest reliability (0.64). ICCs were consistent with these findings. Bland-Altman plots (Supplemental file 4) were generated for each YSQ schema domain showing the relative agreement between YSQ mean scores from Time 1 to Time 2 for each participant, and mean difference and standard deviations (± 1.96) across the sample. Mean differences for each of the 18 schema domains across assessments were all positive (Range, .012–1.554) indicating a small trend towards a positive bias in responses from Time 1 to Time 2. However, for all 18 schema domains, the 95% confidence interval for the mean difference contained zero meaning no statistical evidence of systematic bias between scores from Time 1 to Time 2 was found.

Table 2. Corrected item totals and internal ($n = 94$) and test-retest reliability of early maladaptive schemas (EMS); Pearson's r and intraclass correlation coefficients.

Scale (schema)	Item 1	Item 2	Item 3	Item 4	Item 5	α	Test-retest reliability—r	Test-retest reliability—ICC (95% CI)
Emotional deprivation	.66	.43	**.38**	.63	.54	.76	.80**	.79** (.70 − .86)
Abandonment/deprivation	.59	.58	.58	.60	.50	.79	.80**	.79** (.70 − .86)
Mistrust/abuse	.55	.71	.65	.71	.68	.85	.78**	.78** (.68 − .85)
Social isolation/alienation	.70	.46	.67	.78	.73	.85	.79**	.79** (.69 − .86)
Defectiveness/shame	.49	.66	.56	.61	.65	.80	.78**	.78** (.68 − .85)
Failure to achieve	.55	.43	.57	.70	.69	.80	.84**	.84** (.76 − .89)
Dependence/incompetence	.40	**.34**	**.37**	.44	.58	**.63**	.75**	.74** (.63 − .83)
Vulnerability to harm or illness	.60	.67	.53	.47	.51	.78	.85**	.85** (.78 − .90)
Enmeshment/undeveloped self	**.38**	**.24**	**.38**	.60	.48	**.65**	**.64****	.64** (.49 − .86)
Subjugation	.41	.64	.56	.56	.66	.78	.73**	.72** (.60 − .81)
Self-sacrifice	.45	**.35**	.57	.45	.49	.71	.72**	.72** (.59 − .81)
Emotional inhibition	.56	.58	.56	.45	.55	.77	.77**	.78** (.68 − .85)
Unrelenting standards	.42	.48	.40	.53	**.35**	**.68**	.82**	.81** (.73 − .88)
Entitlement/grandiosity	**.25**	.41	.45	.44	.43	**.64**	.70**	.70** (.57 − .79)
Insufficient self-control	**.30**	.54	.50	**.38**	.43	**.67**	.75**	.74** (.63 − .83)
Approval seeking	.47	.45	.72	.62	.61	.78	.83**	.83** (.74 − .88)
Negativity/pessimism	.55	.61	.61	.58	.62	.80	.89**	.89** (.83 − .93)
Self-punitiveness	.60	.44	.61	.52	.46	.74	.71**	.71** (.58 − .80)

Note: α = Cronbach's alpha; items in bold are below desirable threshold. **$p < .01$ (2-tailed).

Table 3. Pearson r correlation of early maladaptive schema (EMS) and the comparison variables.

Early maladaptive schemas	Vulnerable child	Angry child	Healthy adult	GDS (r)	GAI	Germans	Needs autonomy	Needs competence	Needs relatedness	Total needs
Emotional deprivation	0.59**	0.48**	−0.31**	0.53**	0.49**	0.38**	−0.42**	−0.37**	−0.56**	−0.55**
Abandonment	0.64**	0.48**	−0.40**	0.65**	0.56**	0.69**	−0.55**	−0.42**	−0.52**	−0.61**
Mistrust/abuse	0.58**	0.45**	−0.24*	0.52**	0.46**	0.61**	−0.47**	−0.32**	−0.51**	−0.53**
Social isolation /alienation	0.55**	0.34**	−0.28**	0.49**	0.37**	0.50**	−0.48**	−0.34**	−0.63**	−0.59**
Defectiveness /shame	0.63**	0.44**	−0.39**	0.51**	0.43**	0.57**	−0.48**	−0.38**	−0.52**	−0.56**
Failure to achieve	0.50**	0.39**	−0.34**	0.47**	0.36**	0.40**	−0.55**	−0.62**	−0.37**	−0.63**
Dependence /Incompetence	0.48**	0.43**	−0.46**	0.45**	0.39**	0.48**	−0.52**	−0.51**	−0.35**	−0.56**
Vulnerability to harm or illness	0.70**	0.50**	−0.24*	0.70**	0.72**	0.58**	−0.62**	−0.37**	−0.36**	−0.55**
Enmeshment/ Undeveloped self	0.53**	0.49**	−0.27**	0.44**	0.41**	0.39**	−0.50**	−0.45**	−0.29**	−0.51**
Subjugation	0.61**	0.46**	−0.38**	0.54**	0.51**	0.47**	−0.68**	−0.55**	−0.40**	−0.67**
Self-sacrifice	0.35**	0.26*	−0.04	0.21*	0.29**	0.16	−0.21*	−0.08	−0.07	−0.15
Emotional inhibition	0.44**	0.34**	−0.36**	0.38**	0.39**	0.44**	−0.42**	−0.49**	−0.52**	−0.58**
Unrelenting standards	0.35**	0.24*	−0.07	0.29*	0.36**	0.42**	−0.24*	−0.07	−0.20	−0.21*
Entitlement /Grandiosity	0.30**	0.42**	−0.17	0.27*	0.29**	0.40**	−0.29**	−0.23*	−0.37**	−0.36**
Insufficient self-control	0.45**	0.41**	−0.44**	0.44**	0.40**	0.44**	−0.41**	−0.53**	−0.29**	−0.50**
Approval seeking	0.49**	0.38**	−0.25*	0.37**	0.40**	0.52**	−0.40**	−0.30**	−0.32**	−0.42**
Negativity/Pessimism	0.69**	0.51**	−0.30**	0.64**	0.65**	0.63**	−0.64**	−0.42**	−0.46**	−0.63**
Self-punitiveness	0.35**	0.28**	−0.22*	0.24*	0.26*	0.39**	−0.28**	−0.23*	−0.27*	−0.32**

Note: GDS = Geriatric Depression Scale, Germans = Germans (Personality) Screener. **$p <.01$; *$p <.05$ (2-tailed).

Convergent validity

Pearson correlation coefficients were performed between the YSQ-S3 schemas and the schema modes of the YAMI. As can be seen in Table 3, vulnerable child mode was significantly positively correlated with all 18 schemas ($r = 0.35$ to 0.70, $p < 0.01$). Similarly, angry child mode was significantly positively correlated with all 18 schemas ($r = 0.26$ to 0.50, $p < 0.01$). Healthy adult mode was significantly negatively correlated with 15 of 18 schemas ($r = −0.22$ to $−0.46$, $p < 0.05$), with the exceptions being self-sacrifice, unrelenting standards and entitlement/grandiosity.

Congruent validity

Table 2 also details Pearson correlation coefficients (r) calculated between the YSQ and measures of general psychopathy (GAI, GDS and Germans) and the BPNS sub scales. The GDS scale was positively correlated with all of the schemas ($r = 0.21$ to 0.70, $p < 0.05$). The GAI scale was positively correlated with all of the schemas ($r = 0.26$ to 0.65, $p < 0.05$). The Germans Screener (for personality disorders) was also positively correlated with all of the schemas ($r = 0.38$ to 0.69, $p < 0.05$), with the exception of the self-sacrifice schema ($r = 0.16$, $p > 0.05$).

The autonomy subscale of the Basic Psychological Needs Scale (BPNS) was significantly negatively correlated with all 18 schemas ($r = −0.21$ to $−0.68$, $p < 0.05$). The competence subscale of the BPNS was significantly negatively correlated with 16 of the 18 schemas ($r = −0.23$ to $−0.62$, $p < 0.05$; exceptions were self-sacrifice and unrelenting standards EMS). Relatedness was significantly negatively correlated with 16 of the schemas ($r = −0.27$ to $−0.63$, $p < 0.01$; exceptions were self-sacrifice and unrelenting standards EMS). Total needs satisfaction was significantly negatively correlated with all schemas ($r = −0.21$ to $−0.67$, $p < 0.05$), with the exception of the self-sacrifice EMS ($r = 0.15$, $p < 0.05$).

Intercorrelations of the individual schemas were also examined. Pearson correlations ranged from .10 ($p = 0.32$) to .84 ($p < 0.05$). Only one intercorrelation exceeded .80, which was the correlation between vulnerability to harm/illness and pessimism. A further 3 schema intercorrelations exceeded .70 ($p < 0.05$). Full details of all the intercorrelations are available in a supplementary file [Supplemental file 3].

Discussion

Thirteen of the 18 EMS were found to have acceptable or better reliability (internal consistency). A remaining five schemas had less good reliability. Seventeen of the 18 schemas were found to have acceptable or better test-retest reliability. The enmeshment/underdeveloped self-schema was the one exception, although it did approach an acceptable level.

The YSQ-S3 was found to have acceptable or better internal consistency across 13 of the 18 EMS, indicating that these each represented a consistent construct. Some of the EMS had less good internal consistency. The entitlement/grandiosity EMS, in particular, was found to have questionable internal consistency. This may be due to the nature of ageing, where many begin to feel increasingly less competent and more dependent on others due to physical changes (Videler et al., 2014). The entitlement schema was also found to have lower internal consistency in older adults than younger adults in a previous study (Pauwels et al., 2014). It may also be the case that the entitlement schema warrants further review in general, as two other recent studies have found lower reliability for this schema in particular (Bach et al., 2017; Kriston et al., 2013).

The enmeshment/underdeveloped self-schema also demonstrated relatively lower internal reliability. This may be due to the nature of the questions, which relate mostly to parental figures (e.g. '*I have not been able to separate from my parent(s) the way other people my age seem to*'). During the administration of the questionnaires the researcher was told by a number of participants that they could not answer these questions. For an older adult population, these items may not be relevant when their parents have died several decades ago. This schema also comprised the majority of missing items, which may also explain its questionable test-retest reliability. In terms of other schemas with lower validity, these appeared to be in work-related domains (unrelenting standards, dependence/incompetence and insufficient self-control), which again may not apply to older adults who may have withdrawn from social and occupational activities. In two recent validation studies of the YSQ-S3 (Bach et al., 2017; Kriston et al., 2013), the enmeshment, unrelenting standards and insufficient self-control schemas were also found to have lower reliability than other schemas, however in both these studies all internal consistency statistics exceeded the recommended threshold.

Support for the convergent validity of the YSQ-S3 was found via EMS associations with measures of depression, anxiety, disordered personality and basic psychological needs. There was only one exception to this, the self-sacrifice schema did not correlate positively with disordered personality. Satisfactory congruent validity of the YSQ-S3 was also identified the YSQ-S3 EMSs correlated significantly with the relevant schema modes. The present study found significant relationships between the EMS and several measures of psychopathology. This extends previous research which found that the YSQ-S3 is able to discriminate the absence and presence of psychopathology in general (Rijkeboer, van den Bergh, & van den Bout, 2005). Other studies have found associations between the various EMS and modes and depression (Baranoff et al., 2006; Shorey, Elmquist, Anderson, & Stuart, 2015; Stopa, Thorne, Waters, & Preston, 2001; Welburn, Coristine, Dagg, Pontefract, & Jordan, 2002), anxiety (Hawke & Provencher, 2011; Shorey et al., 2015; Welburn et al., 2002) and personality disorder symptoms (Bamelis, Bloo, Bernstein, & Arntz, 2015; Lobbestael, Arntz, & Sieswerda, 2005). It is notable that the vast majority of schemas are associated with psychopathology symptoms to some degree, which suggests that schema therapy in any form may be effective in treating a variety of psychopathology. There were also intercorrelations between the various schemas of varying degrees, indicating that there may be underlying broader schema domains (Young et al., 2003), or a single underlying schema generic factor (Kriston, Schäfer, von Wolff, Härter, & Hölzel, 2012). While this generic schema factor may not be necessarily directly linked to specific psychopathology, there may be a single underlying trait such as neuroticism or negative affectivity which is common to both schemas and likelihood of developing future psychopathology (Kriston et al., 2012).

The present study is the first to use an older adult sample from the community to validate the YSQ-S3. Further it used a variety of relevant measures to evaluate the convergent validity of the YSQ-S3 in older adults, including two specifically designed for older people. A limited sample size relative to the number of variables investigated and the lack of a personality disordered group of older adults for comparison however are limitations of the current study. Due to the fact that the aim of the study was to provide support for and replicate results found in previous studies with younger adult samples, it was considered acceptable to make use of the smaller sample in this way. The time between completions of the YSQ-S3 (two weeks on average) was also brief given these domains are considered to be enduring trait variables.

In addition to the provision of reliability and validity data with respect to the YSQ-S3 this study can be considered to provide a preliminary understanding of schema theory and its relevance to schema therapy with older adults. It supports the idea that schemas in older adults are linked to various mental health difficulties, with implications the schema model is applicable to this population. The present study can be considered a preliminary validation of the YSQ-S3 in older adults and lends support to further research. From here, future research should include a larger sample of older adults including those drawn from clinical samples to perform a factor analysis of the 18 EMS and 5 potential schema domains. After this, steps could be taken to further investigate the efficacy of schema therapy (Young et al., 2003) in an older adult population with mental health difficulties.

Further research, with a larger sample, including older people with personality disorder and with a longer gap between assessments of test re-test reliability of the YSQ-S3 is recommended. A larger sample would also allow factorial validity of the YSQ-3S with respect to the different schema to be confirmed. Leaving out or re-designing the entitlement/grandiosity and enmeshment/underdeveloped self EMS scales may be necessary to make the YSQ-S3 more appropriate for use with older people. It may also be necessary to reword items that refer to work-related domains to make them relevant to people who are retired. Subsequent to this, investigating the utility of the YSQ-S3 in therapy with older people will be important. In light of the findings of this study clinically, the YSQ-S3 might currently be used but with caution over the interpretation of some EMS.

Disclosure statement

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References

Agronin, M. E., & Maletta, G. (2000). Personality disorders in late life: Understanding and overcoming the gap in research. *The American Journal of Geriatric Psychiatry, 8*, 4–18. doi:doi.org/10.1097/

Bach, B., Simonsen, E., Christoffersen, P., & Kriston, L. (2017). The Young Schema Questionnaire 3 Short Form (YSQ-S3): Psychometric properties and association with personality disorders in a Danish mixed sample. (2017). *European Journal of Psychological Assessment, 33*, 134–143. doi:10.1027/1015-5759/a000272

Balsis, S., Gleason, M. E. J., Woods, C. M., & Oltmanns, T. F. (2007). An item response theory analysis of DSM-IV personality disorder criteria across younger and older age groups. *Psychology and Aging, 22*, 171–185. doi:10.1037/0882-7974.22.1.171

Bamelis, L. L. M., Evers, S. M. A. A., Spinhoven, P., & Arntz, A. (2014). Results of a multicenter randomized controlled trial of the clinical effectiveness of schema therapy for personality disorders. *American Journal of Psychiatry, 171*, 305–322. doi:10.1176/appi.ajp.2013.12040518

Bamelis, L., Bloo, J., Bernstein, D., & Arntz, A. (2015). Effectiveness studies. In M. Van Vreeswijk, J. Broersen, & M. Nadort (Eds.), *The Wiley-Blackwell handbook of schema therapy: Theory, research, and practice* (pp. 493–510). Hoboken, NJ: John Wiley & Sons.

Baranoff, J., Oei, T. P. S., Cho, S. H., & Kwon, S. M. (2006). Factor structure and internal consistency of the Young Schema Questionnaire (Short Form) in Korean and Australian samples. *Journal of Affective Disorders, 93*, 133–140. doi:10.1016/j.jad.2006.03.003

Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects.* Philadelphia, PA: University of Pennsylvania Press.

Bland, J. M., & Altman, D. G. (2010). Statistical methods for assessing agreement between two methods of clinical measurement. *International Journal of Nursing Studies, 47*, 931–936. doi:10.1016/j.ijnurstu.2009.10.001

Calvete, E., Orue, I., & González-Diez, Z. (2013). An examination of the structure and stability of early maladaptive schemas by means of the young schema questionnaire-3. *European Journal of Psychological Assessment, 29*, 283–290. doi:10.1027/1015-5759/a000158

Chen, H., Cohen, P., Crawford, T. N., Kasen, S., Guan, B., & Gorden, K. (2009). Impact of early adolescent psychiatric and personality disorder on long-term physical health: A 20-year longitudinal follow-up study. *Psychological Medicine, 39*, 865–874. doi:10.1017/s0033291708004182

Debast, I., van Alphen, Sebastiaan P. J. (Bas), Rossi, G., Tummers, J. H. A., Bolwerk, N., Derksen, J. J. L., & Rosowsky, E. (2014). Personality traits and personality disorders in late middle and old age: Do they remain stable? A literature review. *Clinical Gerontologist, 37*, 253–271. doi:10.1080/07317115.2014.885917

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227–268. doi:10.1207/S15327965PLI1104_01

Everitt, B. S., & Skrondal, A. (2011). *The Cambridge dictionary of statistics* (4th ed.). Cambridge: Cambridge University Press.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. (1995). The structured clinical interview for DSM-III-R personality disorders (SCID-II). Part I: Description. *Journal of Personality Disorders, 9*(2), 83–91. doi:10.1521/pedi.1995.9.2.83

Frankenburg, F. R., & Zanarini, M. C. (2006). Personality disorders and medical comorbidity. *Current Opinion in Psychiatry, 19*, 428–431. doi:10.1097/01.yco.0000228766.33356.44

Gagné, M. (2003). The role of autonomy support and autonomy orientation in prosocial behavior engagement. *Motivation and Emotion, 27*, 199–223. doi:10.1023/A:1025007614869

Germans, S., Van Heck, G. L., Masthoff, E. D., Trompenaars, F. J. W. M., & Hodiamont, P. P. G. (2010). Diagnostic efficiency among psychiatric outpatients of a self-report version of a subset of screen items of the structured clinical interview for DSM–IV–TR personality disorders (SCID-II). *Psychological Assessment, 22*, 945–952. doi:10.1037/a0021047

Giesen-Bloo, J., Van Dyck, R., Spinhoven, P., Van Tilburg, W., Dirksen, C., Van Asselt, T., … Arntz, A. (2006). Outpatient psychotherapy for borderline personality disorder: Randomized trial of schema-focused therapy vs transference-focused psychotherapy. *Archives of General Psychiatry, 63*, 649–658. doi:10.1001/archpsyc.63.6.649

Hawke, L. D., & Provencher, M. D. (2011). Schema theory and schema therapy in mood and anxiety disorders: A review. *Journal of Cognitive Psychotherapy, 25*, 257–276. doi.org/ 10.1891/0889-8391.25.4.257

Hawke, L. D., & Provencher, M. D. (2012). The Canadian French Young Schema Questionnaire: Confirmatory factor analysis and validation in clinical and nonclinical samples. *Canadian Journal of Behavioural Science/Revue Canadienne Des Sciences Du Comportement, 44*, 40–49. doi:10.1037/a0026197

Himelick, A. J., & Walsh, J. (2002). Nursing home residents with borderline personality traits: Clinical social work interventions. *Journal of Gerontological Social Work, 37*, 49–63. dx.doi.org/ 10.1300/j083v37n01_04

Hsieh, S., McGrory, S., Leslie, F., Dawson, K., Ahmed, S., Butler, C. R., … Hodges, J. R. (2015). The Mini-Addenbrooke's Cognitive Examination: A new assessment tool for dementia. *Dementia and Geriatric Cognitive Disorders, 39*, 1–11. doi:10.1159/000366040

Hsieh, S., Schubert, S., Hoon, C., Mioshi, E., & Hodges, J. R. (2013). Validation of the Addenbrooke's Cognitive Examination III in frontotemporal dementia and Alzheimer's disease. *Dementia and Geriatric Cognitive Disorders, 36*, 242–250. doi:doi.org/ 10.1159/000351671

Jacob, G. A., & Arntz, A. (2013). Schema therapy for personality disorders: A review. *International Journal of Cognitive Therapy, 6*, 171–185. doi:10.1521/ijct.2013.6.2.171

Jovev, M., & Jackson, H. J. (2004). Early maladaptive schemas in disordered individuals. *Journal of Personality Disorders, 18*, 467–478. doi:10.1521/pedi.18.5.467.51325

Kriston, L., Schäfer, J., Jacob, G. A., Härter, M., & Hölzel, L. P. (2013). Reliability and validity of the German version of the Young Schema Questionnaire–Short Form 3 (YSQ-S3). *European Journal of Psychological Assessment, 29*, 205–212. doi:10.1027/1015-5759/a000143

Kriston, L., Schäfer, J., von Wolff, A., Härter, M., & Hölzel, L. P. (2012). The latent factor structure of young's early maladaptive schemas: Are schemas organized into domains ? *Journal of Clinical Psychology, 68*, 684–698. doi:10.1002/jclp.21846

Little Roderick J. A. (1988). Missing-data adjustments in large surveys. *Journal of Business and Economic Statistics, 6*, 287–296. doi:doi.org/ 10.2307/1391878

Lobbestael, J., Arntz, A., & Sieswerda, S. (2005). Schema modes and childhood abuse in borderline and antisocial personality disorders. *Journal of Behavior Therapy and Experimental Psychiatry, 36*, 240–253. doi:10.1016/j.jbtep.2005.05.006

Nunally, J. (1978). *Psychometric theory.* New York, NY: McGraw-Hill.

Oei, T. P. S., & Baranoff, J. (2007). Young Schema Questionnaire: Review of psychometric and measurement issues. *Australian Journal of Psychology, 59*, 78–86. doi:10.1080/00049530601148397

Oltmanns, T. F., & Balsis, S. (2011). Personality disorders in later life: Questions about the measurement, course, and impact of disorders. *Annual Review of Clinical Psychology, 7*, 321–349. doi.org/ 10.1146/annurev-clinpsy-090310-120435

Pachana, N. A., Byrne, G. J., Siddle, H., Koloski, N., Harley, E., & Arnold, E. (2007). Development and validation of the Geriatric Anxiety Inventory. *International Psychogeriatrics, 19*, 103–114. doi:10.1017/s1041610206003504

Pauwels, E., Claes, L., Dierckx, E., Debast, I., Van Alphen, S. B., Rossi, G., … Peuskens, H. (2014). Age neutrality of the Young Schema Questionnaire in patients with a substance use disorder. *International Psychogeriatrics, 26*, 1317–1326. doi:10.1017/S1041610214000519

Petrocelli, J. V., Glaser, B. A., Calhoun, G. B., & Campbell, L. F. (2001). Early maladaptive schemas of personality disorder subtypes. *Journal of Personality Disorders, 15*, 546–559. doi:doi.org/ 10.1521/pedi.15.6.546.19189

Pietrzak, R. H., Wagner, J. A., & Petry, N. M. (2007). DSM-IV personality disorders and coronary heart disease in older adults: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 62*, P295–P299. doi:10.1093/geronb/62.5.p295

Reber, A. S. (2009). *The Penguin dictionary of psychology* (4th ed.). New York, NY: Penguin Press.

Rijkeboer, M. M., van den Bergh, H., & van den Bout, J. (2005). Stability and discriminative power of the Young Schema-Questionnaire in a Dutch clinical versus non-clinical population. *Journal of Behavior Therapy and Experimental Psychiatry, 36*, 129–144. doi:doi.org/10.1016/j.jbtep.2004.08.005

Rosowsky, E., & Molinari, V. (2014). Personality disorders in later life. *Generations, 38*(3), 37–44. Retrieved from http://www.ingentaconnect.com/contentone/asag/gen/2014/00000038/00000003/art00007

Rossi, G., Van den Broeck, J., Dierckx, E., Segal, D. L., & van Alphen, S. P. J. (2014). Personality assessment among older adults: The value of personality questionnaires unraveled. *Aging & Mental Health, 18*, 936–940. doi:10.1080/13607863.2014.924089

Schuster, J. P., Hoertel, N., Le Strat, Y., Manetti, A., & Limosin, F. (2013). Personality disorders in older adults: Findings from the national epidemiologic survey on alcohol and related conditions. *The American Journal of Geriatric Psychiatry, 21*, 757–768. doi:doi.org/ 10.1016/j.jagp.2013.01.055

Segal, D. L., Marty, M. A., Meyer, W. J., & Coolidge, F. L. (2012). Personality, suicidal ideation, and reasons for living among older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 67B*, 159–166. doi:10.1093/geronb/gbr080

Sempértegui, G. A., Karreman, A., Arntz, A., & Bekker, M. H. (2013). Schema therapy for borderline personality disorder: A comprehensive review of its empirical foundations, effectiveness and implementation possibilities. *Clinical Psychology Review, 33*, 426–447. doi.org/ 10.1016/j.cpr.2012.11.006

Shorey, R. C., Elmquist, J., Anderson, S., & Stuart, G. L. (2015). The relationship between early maladaptive schemas, depression, and generalized anxiety among adults seeking residential treatment for substance use disorders. *Journal of Psychoactive Drugs, 47*, 230–238. doi.org/10.1080/02791072.2015.1050133

Stopa, L., Thorne, P., Waters, A., & Preston, J. (2001). Are the short and long forms of the Young Schema Questionnaire comparable and how well does each version predict psychopathology scores ? *Journal of Cognitive Psychotherapy, 15*, 253–272. Retrieved from http://www.ingentaconnect.com/contentone/springer/jcogp/2001/00000015/00000003/art00007

van Alphen, S. P. J., Derksen, J. J. L., Sadavoy, J., & Rosowsky, E. (2012). Features and challenges of personality disorders in late life. *Aging & Mental Health, 16*, 805–810. doi.org/ 10.1080/13607863.2012.667781

van Alphen, S. P. J., Van Dijk, S. D. M., Videler, A. C., Rossi, G., Dierckx, E., Bouckaert, F., & Voshaar, R. O. (2015). Personality disorders in older adults: Emerging research issues. *Current Psychiatry Reports, 17*, 538, 1–7 doi:10.1007/s11920-014-0538-9

Videler, A. C., Rossi, G., Schoevaars, M., van der Feltz-Cornelis, C. M., & van Alphen, S. P. J. (2014). Effects of schema group therapy in older outpatients: A proof of concept study. *International Psychogeriatrics, 26*, 1709–1717. doi:10.1017/s1041610214001264

Videler, A. C., van Alphen, S. P., van Royen, R. J., van der Feltz-Cornelis, C. M., Rossi, G., & Arntz, A. (2017). Schema therapy for personality disorders in older adults: A multiple-baseline study. *Aging & Mental Health*. Advance online publication. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/28429623

Videler, A. C., van Royen, R. J. J., & van Alphen, S. P. J. (2012). Schema therapy with older adults: Call for evidence. *International Psychogeriatrics, 24*, 1186–1187. doi:10.1017/s1041610211002638

Vreeswijk, M. V., Spinhoven, P., Eurelings−Bontekoe, E. H. M., & Broersen, J. (2014). Changes in symptom severity, schemas and modes in heterogeneous psychiatric patient groups following short−term schema Cognitive–Behavioural Group Therapy: A naturalistic pre−treatment and post−treatment design in an outpatient clinic. *Clinical Psychology and Psychotherapy, 21*, 29–38. doi:10.1002/cpp.1813

Welburn, K., Coristine, M., Dagg, P., Pontefract, A., & Jordan, S. (2002). The Schema Questionnaire—Short Form: Factor analysis and relationship between schemas and symptoms. *Cognitive Therapy and Research, 26*, 519–530. doi:10.1023/A:1016231902020

Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M., & Leirer, V. O. (1982). Development and validation of a geriatric depression screening scale: A preliminary report. *Journal of Psychiatric Research, 17*, 37–49. doi:10.1016/0022-3956(82)90033-4

Young, J. E. (1990). *Cognitive therapy for personality disorders: A schema-focused approach*. Sarastota, FL: Professional Resource Press.

Young, J. E. (2005). *Young Schema Questionnaire – Short Form 3 (YSQ-S3)*. New York, NY: Cognitive Therapy Center.

Young, J. E., Atkinson, T., Arntz, A., Engels, A. A., & Weishaar, M. (2005). *The Young Atkinson mode inventory (YAMI-PM,1B)*. New York, NY: Schema Therapy Institute.

Young, J. E., & Brown, G. (1994). Young Schema Questionnaire. In J. E. Young (Ed.), *Cognitive therapy for personality disorders: A schema-focused approach* (2nd ed., pp. 63–76). Sarasota, FL: Professional Resource Press.

Young, J. E., Klosko, J. S., & Weishaar, M. E. (2003). *Schema therapy: A practitioner's guide*. New York, NY: Guilford Press.