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Author post-print (accepted) deposited by Coventry University's Repository

Original citation & hyperlink:

Waldeck, D, Pancani, L & Tyndall, I 2019, 'An examination of the construct validity of the Generalized Pliance Questionnaire' *Journal of Contextual Behavioral Science*, vol. 11, pp. 50-54.

<https://dx.doi.org/10.1016/j.jcbs.2018.12.003>

DOI 10.1016/j.jcbs.2018.12.003

ISSN 2212-1447

ESSN 2212-1455

Publisher: Elsevier

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Running Head: Construct validity of the GPQ

**An examination of the Construct Validity of the Generalized Pliance
Questionnaire**

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Abstract

The Generalized Pliance Questionnaire (GPQ) was originally validated against measures of psychological flexibility and psychological distress. However, measures which have substantial conceptual overlap with the GPQ (e.g., the Need to Belong Scale [NTBS], Brief Fear of Negative Evaluation Scale [BFNE]) were not examined. The present study seeks to investigate the construct validity of the GPQ-9. As expected, data from a survey of 272 participants indicated significant large correlations between the GPQ-9 and NTBS and BFNE respectively. The results of a confirmatory factor analysis confirmed the unidimensional structure of the GPQ-9. A structural equation model revealed that the BFNE (and not the GPQ-9 or NTBS) was significantly associated with psychological flexibility and psychological distress. Implications of these tentative preliminary findings suggest that the GPQ may be a more sensitive measure than the BFNE for ACT research.

Keywords: Generalized pliance, Rule-governed behavior, Relational frame theory, Acceptance and commitment therapy, construct validity.

Introduction

Underlying the efficacy of Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 2012) is a commitment to empirical research on core underlying processes. Specifically, using relational frame theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001) as a framework that underpins ACT, researchers have conducted experiments to demonstrate the importance of language processes in accounting for clinically problematic behavior (e.g., derived relational responding) in order to provide empirical grounding for ACT-based interventions (see Dymond & Roche, 2013). Of particular relevance to the current study, there has been renewed interest in a key aspect of RFT, the role of rule-governed behavior (Hayes, Brownstein, Zettle, Rosenfarb, & Korn, 1986; O’Hora, Barnes-Holmes, & Stewart, 2014) in the development and maintenance of psychopathology (e.g., Kissi, et al., 2017; McAuliffe, Hughes, & Barnes-Holmes, 2014; Monestes, Villatte, Stewart, & Loas, 2014; Törneke, Luciano, & Valdivia-Salas, 2008).

Pliance is a type of rule-following within RFT (see Hayes, Zettle, & Rosenfarb, 1989). Originally, Hayes and Zettle (1982) defined pliance as “...rule-governed behaviour primarily under the control of apparent speaker-mediated consequences for a correspondence between the rule and the relevant behavior” (p. 80). It is important to note (see Kissi et al., 2017) that the term speaker denotes that the rule, also known as a ply, may be given by the same person following the rule or by other persons. More specifically, pliance is motivated by socially mediated consequences. For example, a child may derive rules to seek social approval as a source of reinforcement (Luciano, Valdivia-Salas, & Ruiz, 2012). However, when such rules (e.g., “I must be a good person so others will love me”) become abstracted and not context-specific, then the child may develop generalized pliance (e.g., social approval becomes their *main source* of reinforcement). Unfortunately, in this particular example, as reinforcement is derived socially from other people in the environment, in the long-term the

child may encounter situations that are unpredictable or controllable (e.g., being ostracized). As generalized pliance refers to an abstracted rule-following repertoire it generally results in insensitivity to direct contingencies of reinforcement in the person's environment. This lack of sensitivity to direct contingencies (awareness of own behavior that led to the punishing experience) may actually reinforce their rule-governed behavior (i.e., rigidly sticking to self-rules/plys that were previously successful). For an excellent overview of how pliance leads to generalized pliance see Ruiz, Suárez-Falcón, Barbero-Rubio, and Flórez (2018). The development of generalized pliance has been purported to lead to an increased tendency to engage with inflexible patterns of experiential avoidance (e.g., Luciano et al., 2012; Ruiz et al., 2018), which is known to perpetuate psychological distress (e.g., Hayes et al., 2012). Therefore, it is likely important for researchers to potentially measure generalized pliance when evaluating ACT intervention research.

The investigation of generalized pliance, has been somewhat limited by a lack of empirically validated self-report measures of the construct. However, Ruiz et al. (2018) recently developed the Generalized Pliance Questionnaire (GPQ). They found, with a large sample ($N= 2127$; across three studies), that the GPQ was a reliable and valid measure. Specifically, they revealed that the GPQ had good psychometric properties, had a unidimensional factor structure, and was correlated with theoretically-related process measures of ACT (e.g., Acceptance and Action Questionnaire-II; Bond et al., 2011), and state measures of psychological distress (e.g., Depression Anxiety and Stress Scales; DASS-21; Lovibond & Lovibond, 1995).

There were, however, theoretically-related measures of the GPQ that were not examined by Ruiz et al. (2018). Indeed, the GPQ was constructed to reflect social rule-following (e.g., "I care a lot about what my friends think of me"). From a face validity perspective such items also appear to have substantial overlap with other well-established

social reinforcement measures (e.g., the Need to Belong Scale [NTBS; Leary, Kelly, Cottrell, & Schreindorfer, 2013] and the Brief Fear of Negative Evaluation Scale [BFNE; Leary, 1983]). For example, within both the BFNE (e.g., “I want other people to accept me”) and the NTBS (“I am afraid that people will find fault with me”) participants are required to answer questions related to the degree in which they are worried about social acceptance (i.e., suggesting that seeking social approval reinforcement might reflect a type of generalized pliance behavior). It is important to note, however, that RFT refers to another type of rule-governed behavior known as tracking. According to Törneke et al. (2008), tracking “is rule-governed behavior that is under the control of the apparent correspondence of the rule and the way the world is arranged” (p. 146). Social tracking is tracking in which the consequences (and thus, the experienced contingencies) are social. Pliance and social tracking differ in the sense that while the reinforcers are social across both rule types, in pliance the rule is not tracked as it does not outline the social consequence that reinforces following that particular rule. As noted above, a particular problem with focus on social approval or disapproval is that it might take the rule follower away from other important sources of reinforcement or potentially increase contact with certain aversive consequences. With respect to the present study, pliance refers to socially mediated consequences that do not necessarily have to correspond to social approval but typically do (see Villatte, Villatte, & Hayes, 2016). Thus, it could be that the GPQ might not adequately distinguish generalized pliance from social tracking, and, therefore, it remains pertinent to examine the construct validity of the GPQ by also testing such conceptually similar measures as the BFNE and NTBS.

The current paper investigates the construct validity of the English version of the GPQ. Firstly, bivariate correlations were conducted to test convergent validity between the GPQ and related measures (i.e., NTBS, BFNE). Secondly, a confirmatory factor analysis was conducted to test the dimensionality of the GPQ. We predicted that the GPQ would have a

unidimensional structure similar to Ruiz et al. (2018). Thirdly, we conducted a structural equation model (SEM) to examine the utility of GPQ in correlating with measures of psychological flexibility and psychological distress in comparison to NTBS and BFNE. Based on the empirical literature, all the three constructs (separately) should have an influence on psychological distress and psychological flexibility (e.g., Beekman, Stock, & Marcus, 2016; Hapenny & Fergus, 2017; Jacoby, Abramowitz, Buchholz, Reuman, & Blakey, 2018; Leary et al., 2013; Ruiz et al., 2018). SEM was performed to detect which of the three factors appeared to have the most influence on the outcome variables.

Method

Participants

Two hundred and seventy-two participants were sampled using an online survey distributed through emails to universities within the UK, social media platforms, and internet data collection websites designed for academic researchers (e.g., <http://www.findparticipants.com>). The sample comprised of 187 females (68%). The participants ranged between 18 and 74 years of age ($M = 32$; $SD = 13$). The sample consisted mostly of American (44.5%), British (24.6%), and Canadian (6.6%) participants. The remaining 24.2% consisted of Irish (1.8%), Australian (1%), Chinese (1%), South African (.7%) or classified as 'other' (19.1%). The majority of participants were of white racial identity (77.6%) and employed in a broad array of industries (e.g., Education [27.8%], Health and Social Care [23%], Government [9.5%], Arts and Media [3.2%]). Before data collection began, the study gained approval by the University of Chichester Institutional Research Ethics committee.

Measures

The Generalized Pliance Questionnaire (GPQ)

The GPQ (Ruiz et al., 2018) is an 18-item measure to assess generalized pliance (problematic rule following) in adults. Ruiz et al. (2018) created a shorter, 9-item version (i.e., GPQ-9) which showed an almost perfect correlation (e.g., $r = .98$) with the GPQ-18. Similarly, the GPQ-9 and GPQ-18 had virtually identical correlation coefficients when comparing against all other measures within their study. The GPQ-9 has been shown to have good reliability and construct validity (Ruiz et al., 2018). For the purpose of the present study, we chose to use the English version of the GPQ-9 (Ruiz et al., 2018)¹ to increase the statistical power for the analyses. Participants responded to items (e.g., “I care a lot about what my friends think of me”) using a 7-point Likert scale from 1 (never true) to 7 (always true), ($\alpha = .91$ in the present study).

The Need to Belong Scale (NTBS)

The NTBS (Leary et al., 2013) is a 10-item measure of levels of belongingness. Participants responded to items (e.g., “I want other people to accept me”) using a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree), ($\alpha = .85$ in the present study).

The Brief Fear of Negative Evaluation Scale (BFNE)

The BFNE (Leary, 1983) is a 10-item measure of apprehension of being negatively evaluated. Participants responded to items (e.g., “I am afraid that people will find fault with me”) using a 5-point Likert scale from 1 (not at all characteristic of me) to 5 (extremely characteristic of me), ($\alpha = .93$ in the present study).

¹ The English Version of the GPQ (Ruiz et al., 2018) can be found in the supplementary documentation via the following link: <https://doi.org/10.1016/j.jcbs.2018.03.003>.

The Comprehensive Assessment of Acceptance and Commitment Therapy Processes (CompACT)

The CompACT (Francis, Dawson, & Golijani-Moghaddam, 2016) is a 23-item measure of psychological flexibility (i.e., acceptance and commitment therapy processes). Francis et al. (2016) report that the CompACT has greater face and content validity than the AAQ-II (Bond et al., 2011). The CompACT has a three-factor structure comprising three dyadic ACT processes (openness to experience [OE], behavioral awareness [BA], and valued action [VA]). Participants responded to items (e.g., “one of my big goals is to be free from painful emotions”) using a 7-point Likert scale from 0 (strongly disagree) to 6 (strongly agree), ($\alpha = .89$ [OE], $\alpha = .90$ [BA], $\alpha = .87$ [VA] in the present study).

Depression Anxiety and Stress Scales (DASS-21)

The DASS-21 (Lovibond & Lovibond, 1995) is a 21-item three-factor measure of psychological distress (i.e., depression, anxiety, stress). Participants rated the frequency and severity of experiencing psychological distress in the last week. Participants responded to items (e.g., “I felt I was close to panic”) using a 4-point Likert scale from 0 (did not apply to me at all) to 3 (applied to me most of the time), ($\alpha = .95$ in the present study).

Procedure

The self-report measures were uploaded to the internet with the Qualtrics (Qualtrics, 2014) online survey system. Participants were emailed a link to the webpage and responded to demographic questions and clicked on a forced-choice Informed Consent confirmation question in order to proceed. A randomization function on Qualtrics was chosen which

selected the order of presentation of each of the measures at random. As a forced-choice response format was employed there was no missing data in this study².

Analytic Strategy.

Descriptive statistics and correlations among the composite scores of the key variables were computed using SPSS, version 24 (IBM Corp., 2016). Then, a confirmatory factor analysis (CFA) was run to test the dimensionality of the GPQ-9. As reported in the original paper (Ruiz et al., 2018), the residual variance of the following three pairs of items were correlated: 1-2, 5-9, 6-7. Finally, a SEM was run to investigate the predictive power of generalized pliance (GPQ-9), need to belong (NTB), and fear of negative evaluation (BFNE) on both psychological flexibility (CompACT) and psychological distress (DASS-21). Single-indicator latent variables were computed for each dimension in the SEM to include measurement error without estimating too many parameters compared to the sample size. The following indices were considered to assess the model fit of both the CFA and SEM: (1) the chi-square statistic (χ^2), (2) the comparative fit index (CFI), (3) the Tucker-Lewis index (TLI), (4) the root mean squared error of approximation (RMSEA), (5) the closeness of model fit associated with RMSEA (Cfit), and (6) the standardized root mean square residual (SRMR). Good model fit is indicated by CFI and TLI higher than .95, RMSEA and SRMR lower than .08, and a non-significant probability associated to both χ^2 and Cfit (Brown, 2015; Kline, 2015). The CFA and the SEM were run using Mplus, version 7 (Muthén & Muthén, 2015). Pearson correlations were used in the analyses.

Results

Descriptive statistics

² 10 participants were excluded from the dataset (2 who did not consent; 8 who indicated they were aged below 18). Participants aged 18+ was a requirement for this study.

Means, standard deviations, and bivariate correlations among the key variables are presented in Table 1. As indicated, the GPQ had significant large positive correlations with the NTBS and the BFNE. To check for potential common method bias, a Harman one-factor test was conducted. It was found that one factor accounted for 29% of the variance, which suggests that common method bias is not a pervasive problem in this study.

Dimensionality of the GPQ-9 questionnaire

Before conducting the CFA, a Mardia test was run to check the multivariate normality of the data. The results showed a significant skewness ($M = 3.61$, $SD = 0.41$, $p < .001$) and kurtosis ($M = 98.40$, $SD = 1.62$, $p < .001$), thus robust maximum likelihood with mean and variance correction (MLMV) was used as estimator. The CFA yielded an acceptable model fit [$\chi^2(24) = 62.87$, $p < .001$; CFI = .97; TLI = .95; RMSEA = .077, Cfit = .028; SRMR = .039] comparable to the one reported by Ruiz et al. (2018). Although the probability associated to both χ^2 and the Cfit were significant, the other fit indices were all in the recommended range.

Structural Equation Model (SEM)

As for the dimensionality of the GPQ-9, an initial Mardia test indicated that the multivariate normality was not met (skewness: $M = 3.62$, $SD = 0.39$, $p < .001$; kurtosis: $M = 98.37$, $SD = 1.62$, $p < .001$), thus robust maximum likelihood with mean and variance correction (MLMV) was used as estimator. The SEM, depicted in Figure 1, showed good fit indices [$\chi^2(11) = 13.74$, $p = .25$; CFI = .998; TLI = .992; RMSEA = .030, Cfit = .723; SRMR = .002]. As presented in Table 2, the GPQ and NTBS did not predict OE, BA, VA, or DASS-21. However, BFNE had a significant and positive influence over OE, BA, VA and DASS-21.

Discussion

The present research investigated the construct validity and reliability of the English version of the GPQ (GPQ-9). Consistent with previous research, the GPQ demonstrated a unidimensional structure, good psychometric properties, and was correlated to measures of psychological flexibility and psychological distress (Ruiz et al., 2018). What is new from this study is that the GPQ-9 was examined alongside conceptually-related social psychological measures to examine construct validity (i.e., NTBS and BFNE). As expected, there were large significant correlations between the GPQ-9 and NTBS and BFNE respectively. Indeed, correlations greater than .70 are necessary to establish convergent validity (Chmielewski, Sala, Tang, & Baldwin, 2016). We also found that after accounting for the BFNE, the GPQ-9 is not significantly associated with psychological flexibility or psychological distress. However, as the BFNE appears to contain more items that focus upon key psychological flexibility processes (e.g., experiential avoidance) and emotional symptoms (e.g., worry, fear), the statistical explanatory power of the BFNE over the GPQ-9 may be somewhat unsurprising. Indeed, the BFNE items consider (not obtaining) social approval as a negative reinforcer, whereas not obtaining social approval may serve as either a positive or negative reinforcer within the GPQ-9 items.

A tentative implication from the present study, therefore, is that the BFNE may be a more suitable measure for specific ACT interventions (e.g., when treating social anxiety). In contrast, researchers and clinicians might find the GPQ a more general measure (i.e., it may be more sensitive) to assess generalized pliance pre- and post-intervention. Recent research has demonstrated that the GPQ is strongly correlated with scores on behavioral tasks to measure insensitivity to direct contingencies (O'Connor, Byrne, Ruiz, & McHugh, 2018).

Limitations and Future Directions

The current study has several limitations. First, there was greater representation of women than men in this study. However, such gender-ratios are common when recruiting internet samples (e.g., Gerhart, Baker, Hoerger, & Ronan, 2014). Second, the sample size within this study was comparatively smaller than most of the samples obtained by Ruiz et al. (2018). However, the subject-to-item ratio and sample size in this study are within the recommended range for confirmatory factor analyses (e.g., Kline, 2015) and SEM modelling (e.g., Wolf, Harrington, Clark, & Miller, 2013). Third, a correlational design was adopted, therefore the relationships observed may be inflated. We applied strategies (e.g., randomisation of measures) to reduce common method bias (Podsakoff, MacKenzie, & Podsakoff, 2003). Further, the Harman one-factor test suggested that common method bias is unlikely to be a major problem in this study. Fourth, we did not recruit a clinical sample, therefore the results lack a certain external validity. Therefore, future research should aim to recruit more men and clinical samples when validating the GPQ. Lastly, it could be argued that as we did not measure the full GPQ measure (i.e., GPQ-18) this limits our findings and interpretations. It is important to note, however, that Ruiz et al. (2018) found that the GPQ-18 and GPQ-9 were nearly perfectly correlated. Therefore, any differences by using the GPQ-18 in this study are arguably negligible.

We suggest that future studies examine the measurement invariance across countries and languages of the GPQ. Indeed, the scoring of the GPQ-9 was almost 1 SD higher in our study than the non-clinical samples obtained by Ruiz et al. (2018). Such differences may be due to our sample being so diverse, however, further analyses are beyond the scope for a brief empirical report. In addition, researchers may consider conducting item response theory analyses on the GPQ-9 to evaluate the sensitivity of item functioning (see Ong et al., 2018).

Conclusion

This study presented an examination of the construct validity of the GPQ-9. We found that the GPQ-9 has good psychometric properties and construct validity. However, when accounting for BFNE, the GPQ-9 was not significantly associated with measures of ACT processes and psychological distress. One tentative implication from these findings is that the GPQ-9 may be a more sensitive measure to detect generalized pliance in a range of different contexts. Future research, however, needs to be conducted to further examine the construct validity and predictive power of the GPQ-9. Moreover, the GPQ may not effectively distinguish pliance from social tracking, so a new version of the GPQ could be developed to better fit the definition. As a caveat, however, Kissi et al. (2017) acknowledged that what little empirical evidence does currently exist in the literature suggests that pliance and tracking appear to lack high levels of functional precision; thus, it remains a considerable challenge to use these concepts to functionally isolate functionally distinct classes of behavior.

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Table 1.Means, standard deviations, and correlations between study variables ($N=272$).

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Generalised Pliance Questionnaire (GPQ-9)											
2. Need to Belong Scale (NTB)	.74**										
3. Brief Fear of Negative Evaluation (BFNE)	.75**	.74**									
4. CompACT – Openness to Experience	-.46**	-.46**	-.55**								
5. CompACT – Behavioral Awareness	-.24**	-.18**	-.29**	.43**							
6. CompACT – Valued Action	-.21**	-.16**	-.24**	.42**	.35**						
7. CompACT total	-.42**	.39**	-.50**	.88**	.69**	.70**					
8. DASS-21 – Stress	.29**	.26**	.43**	-.49**	-.43**	-.31**	-.55**				
9. DASS-21 – Anxiety	.26**	.26**	.39**	-.48**	-.38**	-.29**	-.52**	.76**			
10. DASS-21 – Depression	.32**	.29**	.42**	-.52**	-.48**	-.49**	-.64**	.70**	.64**		
11. DASS-21 total	.33**	.31**	.46**	-.57**	-.49**	-.41**	-.65**	.91**	.87**	.88**	
Mean	32.83	31.76	35.76	30.10	16.97	34.51	58.28	7.63	5.12	6.46	38.41
SD	10.22	7.71	11.48	12.68	7.21	7.29	15.44	5.28	5.16	5.87	29.20

Note: * $p < .05$; ** $p < .01$.

Table 2:

Regression Paths for the SEM

Predictor	Dependent Variables			
	DASS-21	OE	BA	VA
GPQ-9	.04 [-.26, .33]	.03 [-.26, .20]	-.16 [-.44, .13]	-.03 [-.34, .29]
NTBS	-.27 [-.58, .04]	-.08 [-.40, .25]	.30 [-.07, .66]	.18 [-.18, .53]
BFNE	.70* [.44, .96]	-.52* [-.78, -.27]	-.43* [-.71, .15]	-.39* [-.69, -.09]
R^2	.27	.38	.11	.08

Note: Regression Betas and Confidence Intervals are presented for all dependent variables; * $p < .001$;

GPQ-9 = Generalized Pliance Questionnaire, NTBS = Need to Belong Scale, BFNE = Brief Fear of Negative Evaluation Scale;

DASS-21 = Depression Anxiety and Stress Scales, OE = Openness to Experience, BA = Behavioral Awareness, VA = Valued Action.

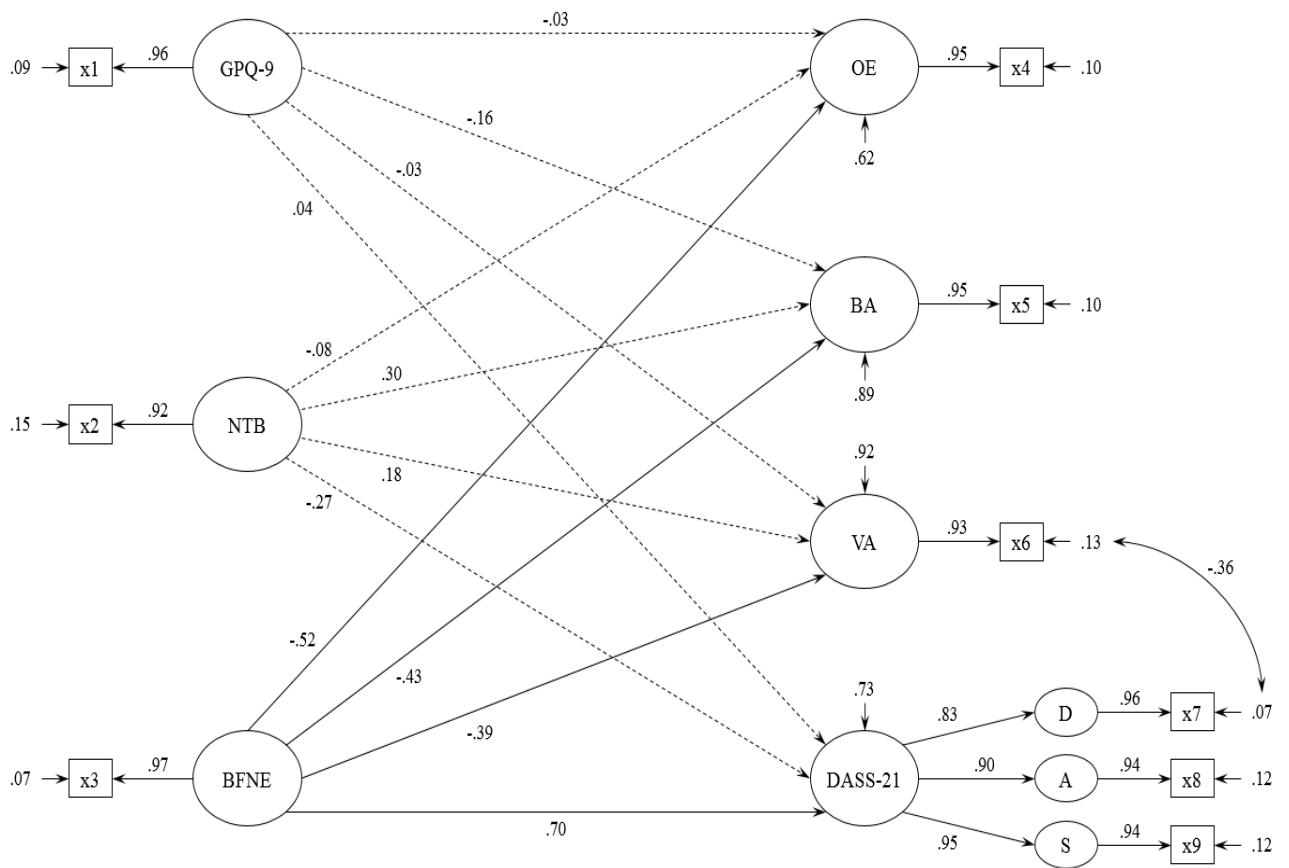


Figure 1.

Results of the structural equation model. Standardized coefficients are displayed: all the coefficients are significant at $p < .001$ except when the path is represented by a dashed line.

Note. GPQ-9 = Generalised Pliance Questionnaire; NTB = Need to Belong Scale; BFNE = Brief Fear of Negative Evaluation; OE = Openness to Experience; BA = Behavioural Awareness; VA = Valued Action; S = Stress; A = Anxiety; D = Depression; CompACT = Comprehensive Assessment of Acceptance and Commitment Therapy Processes ; DASS-21 = Depression, Anxiety and Stress Scales. The errors for VA and D were correlated due to modification indices and theoretical reasons to assume covariance.