Self-Discrepancy: Long Term Test-Retest Reliability and Test-Criterion Predictive Validity

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Abstract

Long term test-retest reliability and predictive test-criterion evidence of validity of scores on measures of the real-ideal self-discrepancy and of the real-ought self-discrepancy were tested over periods of one year and three years. A sample of 184 undergraduates completed at two time points one year apart three instruments that each measure the two self-discrepancies: the idiographic Self-Concept Questionnaire – Personal Constructs, the nonidiographic Self-Concept Questionnaire – Conventional Constructs, and the content-free Abstract Measures. A separate sample of 141 undergraduates completed the instruments three years apart. Both samples completed three depression instruments and three anxiety instruments at the second time point. Results of analyses using latent variables modeled with three observed variables showed substantial statistically significant test-retest reliabilities and significant test-criterion prediction of anxiety and depression on the real-deal and real-ought discrepancy measures over both time periods. Results for the observed variables showed significant one-year and three-year reliabilities for scores on all self-discrepancy measures, as well as significant one-year and three-year predictive validity for scores on all self-discrepancy measures except the abstract measure of real-ought discrepancy in predicting scores on all depression measures and on at least one anxiety measure. The findings support very strong long term stabilities of the self-discrepancy personality constructs and their long term associations with anxiety and depression.

Key words: self-discrepancy, psychometric properties, depression, anxiety

Self-Discrepancy: Long Term Test-Retest Reliability and Test-Criterion Predictive Validity

In his theory of consciousness of self, James (1890/1981) identified self-discrepancy as a conflict between the person's perceived self and the person's expectations of the self, a conflict associated with negative emotions. Rogers (1959; Rogers & Dymond, 1954) introduced the discrepancy between the real self (the self as the person sees the self) and the ideal self (the self as the person would like to be in the person's own eyes) as a psychotherapy outcome measure of personality change related to change in anxiety and depression. Higgins (1987; Higgins, Klein, & Strauman, 1985) added the discrepancy between the real self[1] and the ought self (the self as the person believes others think the person ought or should be) to research on the relation of self-discrepancy to anxiety and depression.

The most widely used instrument that measures both self-discrepancies is the Selves Questionnaire (Higgins, 1987; Higgins et al., 1985). However, there have been criticisms of its psychometric properties. Short-term test-retest reliability coefficients of scores on the two self-discrepancy measures are consistently lower than .70 (Higgins, 1987; Moretti & Higgins, 1990; Scott & O'Hara, 1993), a benchmark recommended by Joiner, Walker, Pettit, Perez and Cukrowicz (2005). Researchers have noted high correlations between scores on the two self-discrepancy measures and questioned the discriminant validity of the two constructs as measured by the Selves Questionnaire, suggesting that only a single self-discrepancy exists (Gramzow, Sedikides, Panter, & Insko, 2000; Phillips & Silvia, 2005; Tangney, Niedenthal, Covert, & Barlow, 1998). These criticisms of the Selves Questionnaire raise questions about its continued use.

Watson (2004) developed three instruments that each measure the two discrepancies: the idiographic Self-Concept Questionnaire – Personal Constructs, the nonidiographic Self-Concept

Questionnaire – Conventional Constructs, and the content-free Abstract Measures. Watson, Bryan, and Thrash (2010) found that the short term test-retest reliability coefficients of scores on the personal construct measures and conventional construct measures of both self-discrepancies over a period of four weeks are .72 to .77 (see the Method section for details), which are above Joiner et al.'s (2005) benchmark of .70. However, coefficients for scores on the abstract measures are .64 for real-ideal discrepancy and .59 for real-ought discrepancy. Watson et al. (2010) also found convergent and discriminant evidence of validity for the two self-discrepancies with the personal construct observed variables, with the conventional construct observed variables, and with latent variables modeled with the observed variables of all three instruments, showing that the real-ideal discrepancy and the real-ought discrepancy are distinct (though highly correlated) personality constructs. These psychometric findings support the use of the Self-Concept Questionnaire – Personal Constructs and the Self-Concept Questionnaire – Conventional Constructs instruments more strongly than the use of the Abstract Measures instrument as observed variables in personality and clinical research. However, the Abstract Measures instrument contributes usefully to the real-ideal and real-ought latent variables, which have very high test-retest coefficients, as discussed later.

In the present study, we used the self-discrepancy instruments developed by Watson (2004) to examine the long term test-retest reliability and predictive test-criterion evidence of validity of scores on the real-ideal discrepancy and the real-ought discrepancy measures over a period of one year and a period of three years. We used as validity criteria measures of anxiety and depression that have been found by Watson et al. (2010) to be associated with both self-discrepancies. Tests of the long term reliability and predictive validity of scores on the self-discrepancy instruments would facilitate instrument selection in future personality and clinical research. More fundamentally, the present study would support long term stabilities of the self-discrepancy personality constructs and their long term associations with anxiety and depression.

In the only previous study of the long term stability of self-discrepancy, Strauman (1996) examined stability over a period of three years using Higgins's (1987) Selves Questionnaire. The test-retest reliability coefficients were statistically significant, but they were only .42 for the real-ideal discrepancy and .44 for the real-ought discrepancy (Strauman, 1996), indicating relatively weak long term stabilities. However, those findings leave open two possibilities: For each discrepancy, the underlying construct is not very stable, or the underlying construct is stable but the measurement instrument is not very reliable. In the present study, we used structural equation modeling to model the underlying construct as a latent variable, using three instruments that each measure the real-ideal discrepancy and the real-ought discrepancy.

The self-discrepancy instruments used for modeling the latent variables in the present study were the three instruments developed by Watson (2004). These instruments' scores have stronger short term test-retest reliabilities than do the scores of Selves Questionnaire, which was used in Strauman's (1996) study of long term stability of the self-discrepancies. Specifically, for the instruments in the present study, short term test-retest reliability coefficients across the three instruments are .64 to .77 for real-ideal discrepancy and .59 to .74 for real-ought discrepancy (Watson et al., 2010), whereas for the Selves Questionnaire, short term test-retest reliability coefficients are .39 to .65 for real-ideal discrepancy and .22 to .53 for real-ought discrepancy across three studies (Higgins, 1987; Moretti & Higgins, 1990; Scott & O'Hara, 1993). The latent variables used in the present study are thus modeled with observed variables that have stronger short term test-retest reliabilities than does the Selves Questionnaire used in Strauman's (1996) study.

The latent variables in the present study have short term test-retest reliability coefficients of .92 for the real-ideal discrepancy and .91 for the real-ought discrepancy over a period of four weeks (Watson et al., 2010). These latent variable reliability coefficients are substantially stronger than the observed variable reliability coefficients reported in the previous paragraph because latent variables are free of much of the error present in observed variables. In the present study, we used analysis of latent variables as the primary method for evaluating the long term test-retest reliabilities and predictive test-criterion evidence of the validities of the self-discrepancies as stable personality constructs. We also evaluated and compared the long term reliabilities and validities of the observed variables. We expected the results for the latent variables to be stronger than the results for the observed variables.

In the test-criterion predictive validity analyses, we used measures of both anxiety and depression as validity criteria for both the real-ideal and real-ought discrepancies. Rogers (1959) theorized that the real-ideal discrepancy is a personality predisposition to anxiety and depression, and Watson et al. (2010) reasoned that the theory can be extended to the real-ought discrepancy. In contrast, Higgins (1987) theorized that the real-ideal discrepancy is uniquely related to depression and the real-ought discrepancy is uniquely related to anxiety. However, several studies using Higgins's (1987) Selves Questionnaire found associations of both discrepancies with both anxiety and depression (Fairbrother & Moretti, 1998; Kinderman & Bentall, 1996; Scott & O'Hara, 1993; Tangney et al., 1998; Weilage & Hope, 1999). Also, Watson et al. (2010), using the three self-discrepancy instruments that are used in the present study, found that both self-discrepancies predicted both anxiety and depression over a period of four weeks. In the present study, we used three measures of anxiety and three measures of depression to model latent variables for anxiety and depression in the test-criterion predictive validity analyses of the self-discrepancy latent variables.

Method

Participants

Participants were two separate samples of undergraduates in an introductory psychology course at a small, selective state university in the middle Atlantic/southeastern region of the United States. Participants received course credit at Time 1 and monetary compensation of $20 and a lottery chance of $50 at Time 2.

In the one-year sample, participants were 95 females and 89 males. Ages at Time 1 ranged from 18 to 21 years with a mean of 18.7. Ethnicity was 70.7% white/European American, 8.7% Asian American, 7.6% African American, 5.4% Hispanic American, and 7.6% mixed race. In the three-year sample, participants were 76 females and 65 males. Ages at Time 1 ranged from 17 to 21 years with a mean of 18.8. Ethnicity was 78.0% white/European American, 6.4% Asian American, 6.4% African American, 2.8% Hispanic American, and 5.7% mixed race.

Self-Discrepancy Instruments

The real-ideal discrepancy and real-ought discrepancy were measured by each of three computer-administered instruments: the idiographic Self-Concept Questionnaire – Personal Constructs, the nonidiographic Self-Concept Questionnaire – Conventional Constructs, and the content-free Abstract Measures (Watson, 2004). These instruments can be viewed at http://watsonresearch.wm.edu.

The Self-Concept Questionnaire – Personal Constructs (SCQ-PC; Watson, 2004). The idiographic SCQ-PC uses bipolar personal constructs (Kelly, 1955) to measure real self, ideal self, and ought self. The participant lists six characteristics that describe the real self ("yourself as YOU see yourself in your own eyes"), six characteristics that describe the ideal self ("yourself as YOU would like to be in your own eyes”), and six characteristics that describe the ought self ("yourself as OTHERS think you ought or should be"). These 18 characteristics then are presented in a random order, and the participant enters the opposite of each characteristic. This procedure elicits six characteristics and six opposite characteristics for each self-component, (i.e., 12 characteristics each for real self, ideal self, and ought self). The 36 characteristics then are presented in a random order, and the participant rates them on a scale from 1 (*never or almost never true*) to 7 (*always or almost always true*) in response to the definitions of real self, ideal self, and ought self that were used to elicit the characteristics.

The RI discrepancy (PC-RI) is scored by calculating the absolute difference between the real-self rating and the ideal-self rating for each of the 12 characteristics of the real self and for each of the 12 characteristics of the ideal self and then calculating the mean of the 24 absolute difference scores. The absolute difference indicates the distance between the real-self rating and the ideal-self rating for a characteristic regardless of whether the ideal-self rating is positive or negative. The RO discrepancy (PC-RO) is scored in a similar way using the 12 characteristics of the real self and the 12 characteristics of the ought self.

In a previous study using a sample of 278 undergraduates, PC-RI and PC-RO were found to have internal consistency alpha coefficients of .91 to .92 and .90 to .91, respectively, at two time points and to have significant four-week test-retest reliability coefficients of .72 and .74, respectively (Watson et al., 2010). With that sample, predictive test-criterion evidence of validity over four weeks was shown for PC-RI and PC-RO by significant correlations of .24 to .37 and of .16 to .27, respectively, with three measures of anxiety and by significant correlations of .39 to .45 and of .26 to .31, respectively, with three measures of depression (Watson et al., 2010).

The Self-Concept Questionnaire – Conventional Constructs (SCQ-CC; Watson, 2004). This questionnaire measures real self, ideal self, and ought self using 28 personality characteristics identified by Parker and Veldman (1969) as the four highest-loading items on each of seven factors in a factor analysis of the Adjective Check List (Gough & Heilbrun, 1965). Examples of the characteristics are *industrious*, *worrying*, *efficient*, *cheerful*, *idealistic*, and *rude*. The participant rates the 28 characteristics in response to the same instructions and on same the scale used for the SCQ-PC.

The RI discrepancy (CC-RI) is scored by calculating the absolute difference between the real-self and ideal-self ratings on each of the 28 characteristics and then calculating the mean of the 28 absolute difference scores. The RO discrepancy (CC-RO) is scored in a similar way using the real-self and ought-self ratings.

In a previous sample of 278 undergraduates, CC-RI and CC-RO were found to have internal consistency alpha coefficients of .82 to .90 and .84 to .90, respectively, at two time points and to have significant four-week test-retest reliability coefficients of .77 and .72, respectively (Watson et al., 2010). With that sample, predictive test-criterion evidence of validity over four weeks was shown for CC-RI and CC-RO by significant correlations of .22 to .38 and of .20 to .32, respectively, with three measures of anxiety and by significant correlations of .33 to .41 and of .23 to .31, respectively, with three measures of depression (Watson et al., 2010).

Abstract Measures of Real-Ideal and Real-Ought Discrepancies (AM-RI and AM-RO; Watson, 2004). This modified version of Shlien's (1962) content-free Abstract Apparatus assesses self-discrepancy by using seven pairs of circles, the areas of which intersect 0%, 16.66%, 33.33%, 50%, 66.66%, 83.33%, and 100%. To measure the RI discrepancy (AM-RI), real self and ideal self are defined in the same way as in the SCQ-PC and SCQ-CC, and the participant is asked to think of one circle as representing the real self and the other as representing the ideal self. The participant selects the pair of circles with the intersecting area that "shows how much your real self and ideal self are alike in general." The discrepancy score is calculated by subtracting the proportion of the intersecting area from 1. The RO discrepancy (AM-RO) is measured with a similar procedure.

In a previous sample of 278 undergraduates, AM-RI and AM-RO were found to have significant four-week test-retest reliability coefficients of .64 and .59, respectively (Watson et al., 2010). With that sample, predictive test-criterion evidence of validity over four weeks was shown for AM-RI and AM-RO by significant correlations of .18 to .33 with three measures of anxiety and a correlation of .16 ($p < .05$) with one of the three measures of anxiety, respectively, and by significant correlations of .35 to .42 and of .19 to .24, respectively, with three measures of depression (Watson et al., 2010).

Anxiety, Depression, and Response Bias Instruments

Anxiety was measured with three instruments: the Beck Anxiety Inventory (BAI; Beck & Steer, 1990), the Anxiety scale of the Depression Anxiety Stress Scales (DASS-A; Lovibond & Lovibond, 1993), and the State-Trait Anxiety Inventory Trait scale anxiety factor (STAI-T-A). The Trait scale of the State-Trait Anxiety Inventory (Spielberger, 1983) was factored to yield a factor that shows stronger discriminant validity in relation to measures of depression than does the full Trait scale (Bieling, Antony, & Swinson, 1998; Vautier, Callahan, Moncany, & Sztulman, 2004).

Depression was measured with three instruments: the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996), the Depression scale of the Depression Anxiety Stress Scales (DASS-D; Lovibond & Lovibond, 1993), and the Center for Epidemiologic Studies – Depression Scale (CES-D; Radloff, 1977).

Response bias was measured with the Impression Management scale (IM) of the Balanced Inventory of Desirable Responding (Paulhus, 1984).

The sources cited for the anxiety, depression, and response bias instruments provide information on their test-retest reliability and test-criterion evidence of validity.

Procedure

At Time 1 participants completed the discrepancy instruments and then the response bias instrument. At Time 2, one year or three years later, participants completed instruments in the following order: discrepancy, impression management, and anxiety and depression. Order of the discrepancy instruments was partially counterbalanced, as was the order of the anxiety and depression instruments. Within each discrepancy instrument, order of the real, ideal, and ought selves was counterbalanced.

Results

Preliminary Analyses

Descriptive statistics and internal consistencies for the observed variables at Time 1[2] and Time 2 in both samples are presented in Table 1. For the self-discrepancy measures, the internal consistency alpha coefficients were strong (.87 to .92), and their average interitem correlations fell within Clark and Watson's (1995) ideal range of .15 to .50. Intercorrelations of the observed variables are presented in Table 2 for the one-year sample and in Table 3 for the three-year sample. In both samples, all observed self-discrepancy variables were normally distributed. In the one-year sample, three of the six observed anxiety and depression variables had significant skew and/or kurtosis; in the three-year sample, four of the six observed anxiety and depression variables had significant skew and/or kurtosis. These abnormal variables were transformed using a square root function or a log function, yielding normal distributions.

In both samples, the attrition group was compared with the final sample, using *t* tests on all observed variables. There were no significant differences in the one-year sample (attrition group $N = 63$, final sample $N = 184$) nor in the three-year sample (attrition group $N = 147$, final sample $N = 141$).

Analytical Method for Temporal Stability and Predictive Validity of the Latent Variable

To evaluate the temporal stabilities and predictive validities of the RI and RO latent variables, we conducted confirmatory factor analyses (CFA). We used a correlated uniqueness model, a contemporary CFA-based approach to analysis of multitrait-multimethod data (Brown, 2006; Marsh, 1989; Kenny & Kashy, 1992). Constructs ("traits") are modeled as latent factors. Shared method variance is removed by specifying correlations between uniquenesses of observed variables assessed by the same instrument ("method"). Latent variables in each model were specified to be correlated unless otherwise stated. Analyses were conducted using Amos 7.0 (Arbuckle, 2006) using full-information maximum likelihood estimation. Model fit was evaluated using three indexes: Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and root-mean-square error of approximation (RMSEA). For TLI and CFI, values near 1 indicate good fit. For RMSEA, values near 0 indicate good fit. Hu and Bentler (1999) recommend cutoff criteria close to the following values: TLI, .95, CFI, .95, and RMSEA, .06. A chi-square difference test was used to compare the relative fits of nested models, in which one model is a constrained version of another model. A significant increase in chi-square as parameters are constrained indicates a decline in fit (Bollen, 1989).

Temporal Stability

For the temporal stability analyses, the CFA model had six factors: real-ideal discrepancy (RI), real-ought discrepancy (RO), and impression management (IM) at both Time 1 and Time 2.

At both Time 1 and Time 2, PC-RI, CC-RI, and AM-RI were modeled as indicators of RI; PC-RO, CC-RO, and AM-RO were modeled as indicators of RO. At a given time point, indicators of RI and RO assessed by the same method (PC, CC, or AM) were modeled as having correlated uniquenesses. Because of the large number of items used to measure IM, three parcels of randomly selected items were modeled as indicators of IM factors at Time 1 and Time 2. A strategy recommended by Podsakoff, MacKenzie, Lee, and Podsakoff (2003) was used to partial variance associated with IM from each observed discrepancy variable (for specification details, see Figures 1 and 2). Autocorrelations were modeled between corresponding uniquenesses at Time 1 and Time 2 (Pitts, West, & Tein, 1996). The model included a means-and-intercepts structure. The model was identified by setting one loading on each latent variable to 1 and setting the corresponding intercepts to 0. This model had good fit (Table 4, Model 1 for the one-year sample and Model 1 for the three-year sample).

We used means-and-covariance-structures (MACS) analysis to examine measurement invariance, stability of individual differences in latent variables (i.e., test-retest correlations), and stability of measurement error. *Measurement invariance* refers to stability of the measurement model parameters (loadings and intercepts), which relate observed variables to latent variables (Pitts et al., 1996). Measurement invariance indicates that the latent variables represent the same construct and have a comparable metric at the two time points. Establishing measurement invariance ensures a meaningful analysis test-retest correlations and other aspects of stability. Because statistically significant levels of measurement non-invariance are sometimes negligible, Little (1997) recommended that the suitability of measurement invariance constraints be judged based on a modeling rationale (specifically, $TLI_{diff} < .05$). However, when testing substantive hypotheses about relations among latent variables, Little recommended using a statistical rationale (i.e., a nonsignificant chi-square difference test). We followed Little's (1997) recommendations by testing measurement invariance across time.

Stability of Factor Loadings and Intercepts (Measurement Invariance). In a test of the invariance of factor loadings across time, the baseline model, as shown in Table 4, was Model 1 for the one-year sample and Model 1 for the three-year sample. Constraining loadings to be invariant across time for each sample (Table 4, Model 2, which had good fit) resulted in no loss of fit ($TLI_{diff} \leq .00$ for both samples). Additionally constraining intercepts to be invariant across time for each sample (Table 4, Model 3, which had good fit) also resulted in no loss of fit ($TLI_{diff} = .00$ for both samples). These findings provide evidence that the latent variables at Time 1 and Time 2 represent comparable constructs.

Test-Retest Correlations of the Latent Variables. As shown in Figures 1 and 2, which are based on Model 3 for the one-year sample and the three-year sample in Table 4, the test-retest correlation for the RI latent variable was .79 for the one-year sample and .68 for the three-year sample, and the test-retest correlation for the RO latent variable was .87 for the one-year sample and .72 for the three-year sample.

Test-Retest Correlations of the Observed Variables. Test-retest reliabilities of the observed-variable discrepancy measures are shown in Table 5 as partial correlations controlling IM at Time 1 and Time 2. The reliabilities for all measures were significant in both the one-year sample and the three-year sample.

In order to evaluate whether the test-retest reliability of each observed-variable measure is influenced by the stability of its error term, we examined the covariances between the error terms of each of the self-discrepancy measures at Time 1 and Time 2. (The error terms are shown in Figures 1 and 2, but their covariances are excluded for presentation clarity.) The covariances of the error terms across time were significant for CC-RI (r = .23), AM-RI (r = .38), and AM-RO (r = .22) in the one-year sample and for CC-RO (r = .28) and AM-RI (r = .29) in the three-year sample. This finding suggests that the observed test-retest correlations for those CC and AM measures are inflated by stability of their error terms.

The conclusion that the observed test-retest correlations for some measures are inflated rests on the assumption that the residual variance in each measure represents measurement error. However, it is possible that some portion of the residual variance represents systematic construct variance that is specific to (i.e., measured only by) a particular measure. Accordingly, these analyses do not warrant strong conclusions regarding the meaning of stability of the error terms. Analyses presented at the end of the next section speak to the soundness of our assumption.

Test-Criterion Predictive Validity

For the test-criterion predictive validity analyses, we tested a model that was similar to Model 1 except that Time 2 RI and RO latent variables were replaced with Time 2 depression and anxiety variables. Specifically, BDI, CES-D, and DASS-D were specified as indicators of the depression latent variable, and BAI, STAI-T-A, and DASS-A were specified as indicators of the anxiety latent variable. Correlations among error terms in Model 1 that are not applicable in this model (autocorrelations of observed variables; discrepancy method effects at Time 2) were excluded. This model had good fit (Table 4, Model 4 for the one-year sample and Model 4 for the three-year sample).

Latent Variables. As shown in Figures 3 and 4, which are based on Model 4 for the one-year sample and the three-year sample in Table 4, both the RI and RO discrepancy latent variables at Time 1 were significantly correlated with both the depression and anxiety latent variables at Time 2 in the one-year sample (RI and depression, r = .48; RI and anxiety, r = .33;

RO and depression, r = .37; RO and anxiety, r = .23) and in the three-year sample (RI and depression, r = .35; RI and anxiety, r = .33; RO and depression, r = .26; RO and anxiety, r = .27). These results showed significant test-criterion predictive validities for the RI and RO discrepancy latent variables.

Observed Variables. The test-criterion predictive validities of the observed-variables self-discrepancy measures are shown in Table 6 as partial correlations controlling IM at Time 1 and Time 2. All discrepancy measures except AM-RO significantly predicted the BDI-II, CES-D, AND DASS-D depression measures in both samples. All discrepancy measures except AM-RO significantly predicted the STAI-T-A anxiety measure in both samples. The discrepancy measures were less consistent in significantly predicting the other two anxiety measures. PC-RI predicted BAI and DASS-A in the three-year sample. PC-RO predicted DASS-A in the three-year sample. CC-RI predicted BAI in both samples and DASS-A in the one-year sample. AM-RI predicted DASS-A in the three-year sample. AM-RO predicted none of the anxiety measures in either sample. In summary, these results showed significant test-criterion predictive validities for the observed-variable self-discrepancy measures, except AM-RO, with the three measures of depression and with one or more of the three measures of anxiety over one year and three years.

In the earlier section on test-retest correlation of observed variables, we assumed that the residual variance in the discrepancy observed variables represent measurement error rather than construct variance that is specific to a particular measure. To examine the soundness of our assumption, we tested whether the residual variance terms demonstrated predictive validity. In 12 separate analyses for the one-year sample and also for the three-year sample, the residual of one of the six discrepancy measures was specified to correlate with either the anxiety or depression latent variable. (The residuals are shown in Figures 3 and 4 as error terms, but their correlations with the anxiety and depression latent variables are excluded for presentation clarity.) None of the correlations was significant. These findings fail to support the predictive validity of the self-discrepancy residuals, consistent with our assumption that the residuals represent measurement error rather than construct variance that is specific to a particular measure.

Discussion

Research on self-concept has included both its stability over time and its malleability over time due to changing situations (Markus & Kunda, 1986), a difference analogous to traits and states (Fleeson, 2001). In the present study, we tested the long term stabilities of the real-ideal and real-ought self-discrepancies as personality constructs. The test-retest reliabilities of the latent variables measuring the real-ideal and real-ought discrepancies over one year and three years were very substantial. Reliabilities over one year were .79 for the real-ideal discrepancy and .87 for the real-ought discrepancy, and reliabilities over three years were .68 for the real-ideal discrepancy and .72 for the real-ought discrepancy. The reliabilities of the latent variables indicate very strong long term stabilities of the self-discrepancy constructs.

Significant test-retest reliabilities of the observed variables also support the long term stabilities (see Table 5), although, as expected, the reliabilities of the observed variables were not as strong as the reliabilities of the corresponding latent variables. Also, the test-retest coefficients of some of the observed variables are inflated because of the stability of their error terms. However, the reliabilities of scores on the personal construct measures of discrepancy are not inflated. The reliabilities of scores on these measures in the three-year sample, .50 for real-ideal discrepancy and .60 for real-ought discrepancy, are stronger than the .42 and .44 reported in the three-year study by Strauman (1996) for the Selves Questionnaire. Although substantial, the three-year reliabilities for scores on the personal construct measures are not as strong as the seven-year reliabilities of scores on the Big 5 traits as measured by the NEO-PI, which range from .63 to .81 (Costa & McCrae, 1992). This comparison of test-retest coefficients of observed variables suggests that self-discrepancy is less stable than basic dimensions of personality, perhaps because it is less strongly grounded in biology. Additional research would be needed to address this issue more definitively.

Test-criterion predictive validity analyses using the latent variables showed significant correlations of the real-ideal and real-ought discrepancies with depression and anxiety one year and three years later. Over one year, correlations of real-ideal discrepancy with depression and anxiety were .48 and .33, respectively, and correlations of real-ought discrepancy with depression and anxiety were .37 and .23, respectively. Over three years, correlations of real-ideal discrepancy with depression and anxiety were .35 and .33, respectively, and correlations of real-ought discrepancy with depression and anxiety were .26 and .27, respectively. For the observed variables, findings showed significant predictive test-criterion evidence of validity over one year and three years for the self-discrepancy measures, except AM-RO, with the three measures of depression and with one or more of the three measures of anxiety (see Table 6). As expected, results were generally stronger for the latent variables than for the observed variables. These findings show the long term associations of the real-ideal and real-ought discrepancies with depression and anxiety.

The present study has several limitations. One limitation is that interviews were not included in the assessment of anxiety and depression; however, response bias on the self-report instruments was controlled in the analyses. Another limitation is that 26% of the one-year sample and 51% of the three-year sample did not complete the study, possibly limiting the generalizability of the findings. However, analyses showed no significant differences on the observed variables between participants who completed the study and those who did not. Another limitation is that the sample sizes (*N* = 184, *N* = 141) are somewhat smaller than is generally recommended for structural equation modeling (e.g., *N* = 200; Barrett, 2007). However, the problems associated with small sample sizes are unlikely to have compromised the conclusions: There were no improper solutions or convergence problems, long-term effects were found in spite of not having greater power, and most of the findings are highly significant; therefore our conclusions are unlikely to be jeopardized by biases in standard errors if any such biases were present. Also, our conclusions are also supported by regression analysis, which has more modest sample size requirements. Generalizability of the findings also may be limited by the samples of primarily white/European-American university students with Time 1 mean ages of 18.7 years for the one-year sample and 18.8 years for the three-year sample. The present findings also may not generalize to samples of individuals with clinical levels of anxiety and depression.

The findings of the present study extend the findings of a study of the psychometric properties of the three self-discrepancy instruments, the scores of which were shown to have significant test-retest reliabilities and test-criterion predictive validities over a period of four weeks (Watson et al., 2010). As in that study, the long term findings show stronger reliabilities and validities for scores on the personal construct instrument, the conventional construct instrument, and the abstract measure of real-ideal discrepancy than for the abstract measure of real-ought discrepancy. Also, as in that study, the personal construct instrument was the only one for which the test-retest reliability of its scores was not inflated by the stability of its error terms. The present study and the Watson et al. (2010) study both support for future research the use of the personal construct observed variables most strongly of the observed variables. The present study and the Watson et al. (2010) study both support even more strongly the use of the more highly reliable latent variables modeled with the three instruments.

A theoretical basis for the strength of the personal construct instrument is that personal constructs are an accurate representation of the unique experience of each individual (Watson & Watts, 2001; Watson & Welch-Ross, 2000). James (1890/1981) observed that only the attributes a person considers important contribute to that person's sense of self-worth. The uniqueness of an individual's perceptions is emphasized in the individuality corollary of Kelly's (1955) theory of personal constructs. In support of this theory, Watson and Watts (2001) found that scores on personal construct measures of self-discrepancy, which are comprised of items important to the individual, show incremental evidence of validity in relation to neuroticism above and beyond scores on conventional construct measures of self-discrepancy, which are comprised of items that may not be important to the individual.

The present study extends findings of the associations of both the real-ideal and real-ought self-discrepancies with both anxiety and depression. In contrast to Higgins's (1987) theory that the real-ideal discrepancy is uniquely related to depression and the real-ought discrepancy is uniquely related to anxiety, Watson et al. (2010) interpreted Rogers's (1959) theory to mean that both discrepancies are related to both anxiety and depression. In his theory of the development of self-discrepancy, Rogers (1959) theorized that the introjection of conditions of worth from significant others is the basis of a high real-ideal discrepancy, which is a personality predisposition to anxiety and depression. Watson et al. (2010) reasoned that Rogers's (1959) concept of conditions of worth from significant others can be operationally defined as a high real-ought discrepancy. With conditions of worth defined as a high real-ought discrepancy, Rogers’s (1959) theory can be interpreted to mean that the two discrepancies are highly correlated and that both discrepancies are associated with both anxiety and depression. These relationships are supported by previous research findings (Watson et al., 2010) and by the findings of the present study.

The findings of the present study contribute to theory of long term depression and anxiety. The stabilities of the real-ideal and real-ought discrepancy scores and their prediction of future depression and anxiety scores are consistent with Rogers’s (1959) theory that self-discrepancy is a personality predisposition to psychological distress, but the present study does not address the causal relationship in Rogers’s (1959) theory. The findings of the present study support very strong long term stabilities of the self-discrepancy personality constructs and their long term associations with anxiety and depression.

Footnotes

[1]Higgins's term is *actual self*. Rogers's earlier term *real self* is used in the present study.

[2]The Time 1 data in the three-year sample are a subset of the Time 1 data in Study 2a in Watson et al. (2010), which analyzed the test-retest reliabilities and predictive test-criterion validities of scores on the self-discrepancy instruments over a period of four weeks. The present study addressed these reliabilities and validities over a period of three years; none of the relationships reported in it was reported in the previous publication.

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Table 1

Descriptive Statistics and Internal Consistencies for One-Year Sample (N = 184) and Three-Year Sample (N = 141)

Measure	*M*	*SD*	Range	Alpha	AIC
			One-Year Sample		
PC-RI T1	1.53	0.82	0.00 – 4.17	.92	.31
PC-RI T2	1.40	0.74	0.00 – 3.96	.91	.29
PC-RO T1	1.39	0.77	0.00 – 3.58	.90	.27
PC-RO T2	1.44	0.75	0.00 – 4.13	.90	.28
CC-RI T1	1.53	0.65	0.43 – 4.04	.89	.22
CC-RI T2	1.48	0.63	0.00 – 3.07	.89	.22
CC-RO T1	1.57	0.65	0.21 – 3.71	.88	.21
CC-RO T2	1.53	0.65	0.00 – 3.25	.89	.22
AM-RI T1[a]	0.45	0.22	0.00 – 1.00	–	–
AM-RI T2[a]	0.45	0.20	0.00 – 1.00	–	–
AM-RO T1[a]	0.45	0.20	0.00 – 0.84	–	–
AM-RO T2[a]	0.46	0.19	0.00 – 1.00	–	–
BDI-II	9.33	8.23	0 – 39	.91	.32
CES-D	33.28	9.77	20 – 74	.91	.33
DASS-D[b]	6.09	7.74	0 – 41	.95	.57
BAI[b]	28.42	6.83	21 – 59	.86	.23
STAI-T-A	13.67	4.33	7 – 28	.84	.42

(Table 1 continues)

(Table 1 continued)

DASS-A[b]	4.20	4.89	0 – 30	.85	.30
IM T1	6.39	3.57	0 – 18	.75	.13
IM T2	6.20	3.43	0 – 20	.73	.12
		Three-Year Sample			
PC-RI T1	1.43	0.81	0.04 – 4.29	.92	.33
PC-RI T2	1.31	0.65	0.00 – 3.13	.87	.22
PC-RO T1	1.28	0.73	0.08 – 3.54	.90	.28
PC-RO T2	1.37	0.73	0.04 – 3.63	.89	.26
CC-RI T1	1.45	0.59	0.32 – 3.46	.88	.19
CC-RI T2	1.37	0.55	0.14 – 2.96	.87	.19
CC-RO T1	1.45	0.61	0.21 – 3.50	.88	.20
CC-RO T2	1.43	0.59	0.14 – 3.04	.87	.20
AM-RI T1[a]	0.46	0.19	0.00 – 0.84	–	–
AM-RI T2[a]	0.40	0.18	0.00 – 0.84	–	–
AM-RO T1[a]	0.46	0.18	0.17 – 0.84	–	–
AM-RO T2[a]	0.42	0.19	0.00 – 0.84	–	–
BDI-II[b]	7.53	7.29	0 – 40	.90	.31
CES-D	31.10	8.70	20 – 64	.90	.30
DASS-D[b]	4.38	6.12	0 – 34	.94	.56
BAI[b]	27.82	6.90	21 – 54	.88	.26
STAI-T-A	13.25	3.98	7 – 24	.82	.38

(Table 1 continues)

(Table 1 continued)

DASS-A[b]	3.62	4.10	0 – 18	.80	.23
IM T1	6.56	3.44	0 – 15	.73	.11
IM T2	6.99	3.67	0 – 18	.76	.13

Note. AIC = average inter-item correlation; PC = Personal Constructs; CC = Conventional Constructs; AM = Abstract Measure; RI = Real-Ideal Discrepancy; RO = Real-Ought Discrepancy; BDI-II = Beck Depression Inventory-II; CES-D = Center for Epidemiologic Studies-Depression Scale; DASS-D = Depression Anxiety Stress Scales-Depression scale; BAI = Beck Anxiety Inventory; STAI-T-A = State-Trait Anxiety Inventory-Trait-anxiety factor; DASS-A = Depression Anxiety Stress Scales-Anxiety scale; IM = Impression Management; T1 = Time 1; T2 = Time 2.

[a]The AM measures have only one item, so internal consistency and inter-item correlation are not applicable.

[b]Following are the 25th, 50th, and 75th quartiles for variables that had significant skew and/or kurtosis. One-year sample: DASS-D 1.00, 3.00, 8.00; BAI 24.00, 27.00, 32.00; DASS-A 1.00, 2.50, 6.00. Three-year sample: BDI-II 3.00, 6.00, 10.50; DASS-D 1.00, 2.00 5.00; BAI 23.00, 26.00, 30.00; DASS-A 1.00, 2.00, 4.00.

Table 2

One-Year Sample: Intercorrelations of Self-Discrepancy, Depression, and Anxiety Observed Variables (N = 184)

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. PC-RI Time 1	-																			
2. PC-RO Time 1	.61	-																		
3. CC-RI Time 1	.61	.44	-																	
4. CC-RO Time 1	.48	.66	.71	-																
5. AM-RI Time 1	.53	.36	.59	.45	-															
6. AM-RO Time 1	.31	.37	.28	.40	.50	-														
7. PC-RI Time 2	.51	.40	.63	.55	.49	.31	-													
8. PC-RO Time 2	.37	.50	.50	.63	.35	.39	.68	-												
9. CC-RI Time 2	.37	.28	.67	.52	.43	.24	.73	.54	-											
10. CC-RO Time 2	.30	.46	.56	.69	.40	.31	.60	.68	.76	-										
11. AM-RI Time 2	.34	.37	.46	.43	.60	.36	.59	.48	.58	.49	-									
12. AM-RO Time 2	.19	.29	.23	.33	.36	.44	.35	.41	.34	.39	.50	-								
13. BDI-II	.21	.18	.44	.34	.36	.15	.54	.43	.55	.51	.46	.38	-							
14. CES-D	.30	.23	.44	.36	.31	.15	.53	.42	.58	.50	.40	.33	.75	-						
15. DASS-D	.23	.23	.40	.30	.26	.10	.47	.35	.49	.44	.39	.30	.79	.87	-					
16. BAI	.07	.07	.18	.08	.16	.11	.22	.23	.26	.24	.22	.20	.49	.51	.47	-				
17. STAI-T-A	.22	.20	.36	.35	.25	.16	.50	.44	.61	.54	.43	.35	.61	.75	.65	.48	-			
18. DASS-A	.14	.08	.28	.16	.14	.09	.26	.26	.34	.34	.19	.19	.60	.69	.69	.67	.58	-		
19. IM Time 1	-.20	-.11	-.19	-.16	-.22	-.20	-.10	-.08	-.15	-.18	-.12	-.14	-.19	-.16	-.13	-.08	-.19	-.13	-	
20. IM Time 2	-.13	.01	-.17	-.10	-.11	-.11	-.13	-.03	-.18	-.13	-.11	-.05	-.12	-.18	-.16	-.03	-.18	-.11	.73	-

Note. PC = Personal Constructs; CC = Conventional Constructs; AM = Abstract Measure; RI = Real-Ideal Discrepancy; RO = Real-Ought Discrepancy; BDI-II = Beck Depression Inventory-II; CES-D = Center for Epidemiologic Studies-Depression Scale; DASS-D = Depression Anxiety Stress Scales-Depression scale; BAI = Beck Anxiety Inventory; STAI-T-A = State-Trait Anxiety Inventory-Trait-anxiety factor; DASS-A = Depression Anxiety Stress Scales-Anxiety scale; IM = Impression Management.

If $r = .15 – .19$, $p < .05$. If $r = .20 – .25$, $p < .01$. If $r \geq .26$, $p < .001$. If $r \leq .14$, p is *ns*.

Table 3

Three-Year Sample: Intercorrelations of Self-Discrepancy, Depression, and Anxiety Observed Variables (N = 141)

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. PC-RI Time 1	-																			
2. PC-RO Time 1	.69	-																		
3. CC-RI Time 1	.68	.53	-																	
4. CC-RO Time 1	.46	.68	.61	-																
5. AM-RI Time 1	.51	.40	.50	.33	-															
6. AM-RO Time 1	.35	.44	.38	.36	.47	-														
7. PC-RI Time 2	.44	.34	.43	.25	.25	.23	-													
8. PC-RO Time 2	.41	.55	.41	.49	.32	.33	.58	-												
9. CC-RI Time 2	.37	.36	.47	.35	.26	.23	.67	.65	-											
10. CC-RO Time 2	.33	.46	.36	.54	.23	.28	.46	.75	.75	-										
11. AM-RI Time 2	.22	.19	.32	.16	.43	.34	.49	.40	.53	.38	-									
12. AM-RO Time 2	.24	.28	.31	.31	.27	.32	.34	.49	.49	.51	.50	-								
13. BDI-II	.26	.17	.23	.16	.24	.17	.53	.42	.55	.44	.57	.39	-							
14. CES-D	.29	.21	.27	.19	.21	.12	.52	.44	.54	.42	.46	.35	.82	-						
15. DASS-D	.19	.16	.17	.18	.17	.15	.42	.40	.51	.39	.45	.29	.76	.83	-					
16. BAI	.20	.13	.20	.15	.13	.10	.40	.28	.34	.34	.33	.33	.67	.72	.61	-				
17. STAI-T-A	.25	.27	.23	.19	.20	.06	.47	.37	.55	.43	.43	.37	.70	.73	.64	.56	-			
18. DASS-A	.23	.17	.16	.15	.20	.14	.43	.36	.40	.34	.39	.36	.66	.75	.70	.73	.66	-		
19. IM Time 1	-.23	-.16	-.29	-.08	-.18	-.23	-.06	.00	-.06	-.01	-.03	.01	-.13	-.13	-.06	-.11	-.16	-.06	-	
20. IM Time 2	.04	.10	-.07	.07	-.02	-.11	-.16	-.07	-.15	-.04	-.15	-.09	-.24	-.12	-.19	-.14	-.17	-.10	.59	-

Note. PC = Personal Constructs; CC = Conventional Constructs; AM = Abstract Measure; RI = Real-Ideal Discrepancy; RO = Real-Ought Discrepancy; BDI-II = Beck Depression Inventory-II; CES-D = Center for Epidemiologic Studies-Depression Scale; DASS-D = Depression Anxiety Stress Scales-Depression scale; BAI = Beck Anxiety Inventory; STAI-T-A = State-Trait Anxiety Inventory-Trait-anxiety factor; DASS-A = Depression Anxiety Stress Scales-Anxiety scale; IM = Impression Management.

If $r = .15 – .21$, $p < .05$. If $r = .22 – .28$, $p < .01$. If $r \geq .29$, $p < .001$. If $r \leq .14$, p is *ns.*

Table 4

Model Goodness-of-Fit Indexes for One-Year Sample (N = 184) and Three-Year Sample (N = 141)

Model	*df*	χ^2	TLI	CFI	RMSEA
One-Year Sample					
Model 1: Baseline Model	101	145.36	.96	.98	.05
Model 2: Invariance of Loadings	105	149.37	.97	.98	.05
Model 3: Invariance of Intercepts	109	151.25	.97	.98	.05
Model 4: Criterion Validity	110	197.12	.94	.95	.07
Three-Year Sample					
Model 1: Baseline Model	101	136.84	.96	.97	.05
Model 2: Invariance of Loadings	105	144.60	.96	.97	.05
Model 3: Invariance of Intercepts	109	147.05	.96	.97	.05
Model 4: Criterion Validity	110	150.11	.96	.97	.05

Note. TLI = Tucker-Lewis Index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation.

All χ^2 *p*s $< .05$.

Table 5

Self-Discrepancy Test-Retest Reliability for One-Year Sample (N=184) and Three-Year Sample (N=141): Partial Correlations Controlling Impression Management at Time 1 and Time 2

Sample	PC-RI	PC-RO	CC-RI	CC-RO	AM-RI	AM-RO
One-Year	.50	.50	.66	.69	.60	.43
Three-Year	.50	.60	.50	.56	.46	.34

Note. PC = Personal Constructs; CC = Conventional Constructs; AM = Abstract Measure; RI = Real-Ideal Discrepancy; RO = Real-Ought Discrepancy.

All *ps* < .001.

Table 6

Self-Discrepancy Test-Criterion Predictive Validity for One-Year Sample (N=184) and Three-Year Sample (N=141): Partial Correlations Controlling Impression Management at Time 1 and Time 2

	Time 2					
	Depression			Anxiety		
Time 1	BDI-II	CES-D	DASS-D	BAI	STAI-T-A	DASS-A
One-Year Sample						
PC-RI	.18	.28	.21	.05	.19	.12
PC-RO	.16	.24	.24	.06	.20	.08
CC-RI	.42	.42	.38	.17	.33	.26
CC-RO	.32	.35	.29	.07	.33	.14
AM-RI	.33	.29	.25	.14	.23	.12
AM-RO	.12	.13	.08	.10	.13	.06
Three-Year Sample						
PC-RI	.29	.29	.23	.21	.26	.24
PC-RO	.21	.21	.20	.14	.28	.19
CC-RI	.23	.25	.19	.19	.21	.16
CC-RO	.18	.19	.21	.16	.19	.16
AM-RI	.25	.20	.19	.12	.19	.20
AM-RO	.15	.09	.15	.08	.03	.14

(Table 6 continues)

(Table 6 continued)

Note. PC = Personal Constructs; CC = Conventional Constructs; AM = Abstract Measure; RI = Real-Ideal Discrepancy; RO = Real-Ought Discrepancy; BDI-II = Beck Depression Inventory-II; CES-D = Center for Epidemiologic Studies-Depression Scale; DASS-D = Depression Anxiety Stress Scales-Depression scale; BAI = Beck Anxiety Inventory; STAI-T-A = State-Trait Anxiety Inventory-Trait-anxiety factor; DASS-A = Depression Anxiety Stress Scales-Anxiety scale.

For one-year sample, if partial $r \geq .16$, $p < .05$.

For three-year sample, if partial $r \geq .18$, $p < .05$.

Figure Captions

Figure 1. Table 4, One-Year Sample Model 3: test-retest reliability 6-factor CFA with loadings and intercepts constrained. e1-e18 = error terms 1-18; RI = real-ideal discrepancy; RO = real-ought discrepancy; a = Time 1; b = Time 2; PC = Personal Constructs; CC = Conventional Constructs; AM = Abstract Measure. For presentation clarity, the following were excluded from the figure: self-discrepancy error paths within time (e.g., e1 to e4) and across time (e.g., e1 to e7), IM test-retest path (r = .84, p < .001), IM error paths across time (e.g., e13 to e16), IM parcel loadings (e.g., p1IMa on IMa), and loadings of the observed self-discrepancy variables on the IM factors (e.g., PC-RIa on IMa). All loadings and covariances were significant at $p \leq .001$.

Figure 2. Table 4, Three-Year Sample Model 3: test-retest reliability 6-factor CFA with loadings and intercepts constrained. e1-e18 = error terms 1-18; RI = real-ideal discrepancy; RO = real-ought discrepancy; a = Time 1; b = Time 2; PC = Personal Constructs; CC = Conventional Constructs; AM = Abstract Measure. For presentation clarity, the following were excluded from the figure: self-discrepancy error paths within time (e.g., e1 to e4) and across time (e.g., e1 to e7), IM test-retest path (r = .64, p < .001), IM error paths across time (e.g., e13 to e16), IM parcel loadings (e.g., p1IMa on IMa), and loadings of the observed self-discrepancy variables on the IM factors (e.g., PC-RIa on IMa). All loadings and covariances were significant at $p \leq .001$.

Figure 3. Table 4, One-Year Sample Model 4: criterion validity 6-factor CFA. e1-e18 = error terms 1-18; RI = real-ideal discrepancy; RO = real-ought discrepancy; a = Time 1; b = Time 2; PC = Personal Constructs; CC = Conventional Constructs; AM = Abstract Measure. For presentation clarity, the following were excluded from the figure: self-discrepancy error paths within time (e.g., e1 to e4) and across time (e.g., e1 to e7), IM test-retest path (r = .84, p < .001), IM error paths across time (e.g., e13 to e16), IM parcel loadings (e.g., p1IMa on IMa), and

loadings on the observed self-discrepancy variables on IM factors (e.g., PC-RIa on IMa). All loadings and covariances were significant at $p \leq .001$, except ROa-ANX ($p < .01$).

Figure 4. Table 4, Three-Year Sample Model 4: criterion validity 6-factor CFA. e1-e18 = error terms 1-18; RI = real-ideal discrepancy; RO = real-ought discrepancy; a = Time 1; b = Time 2; PC = Personal Constructs; CC = Conventional Constructs; AM = Abstract Measure. For presentation clarity, the following were excluded from the figure: self-discrepancy error paths within time (e.g., e1 to e4) and across time (e.g., e1 to e7), IM test-retest path ($r = .64$, $p < .001$), IM error paths across time (e.g., e13 to e16), IM parcel loadings (e.g., p1IMa on IMa), and loadings of the observed self-discrepancy variables on the IM factors (e.g., PC-RIa on IMa). All loadings and covariances were significant at $p \leq .001$, except ROa-DEP and ROa-ANX (*p*s < .01).

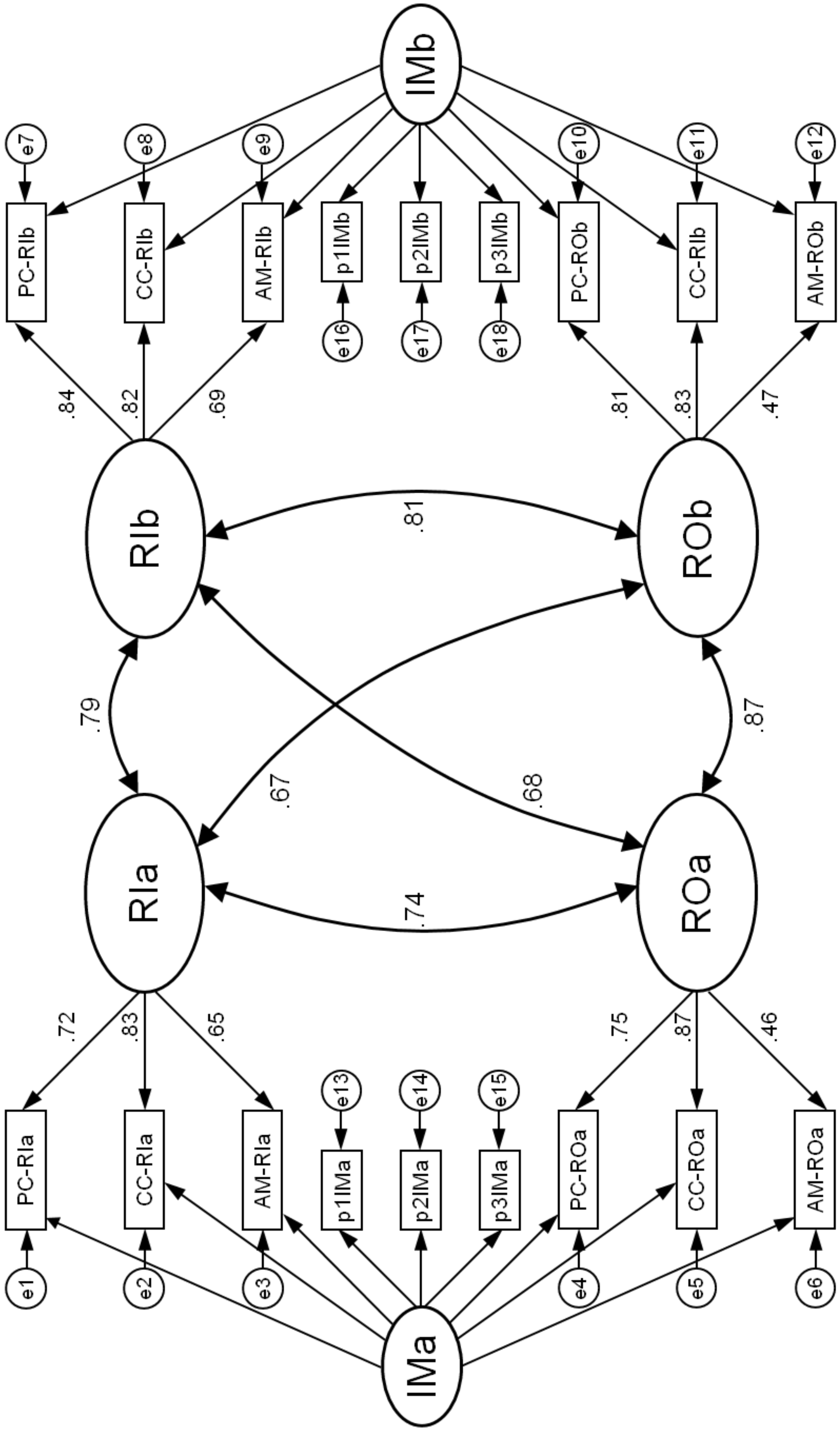
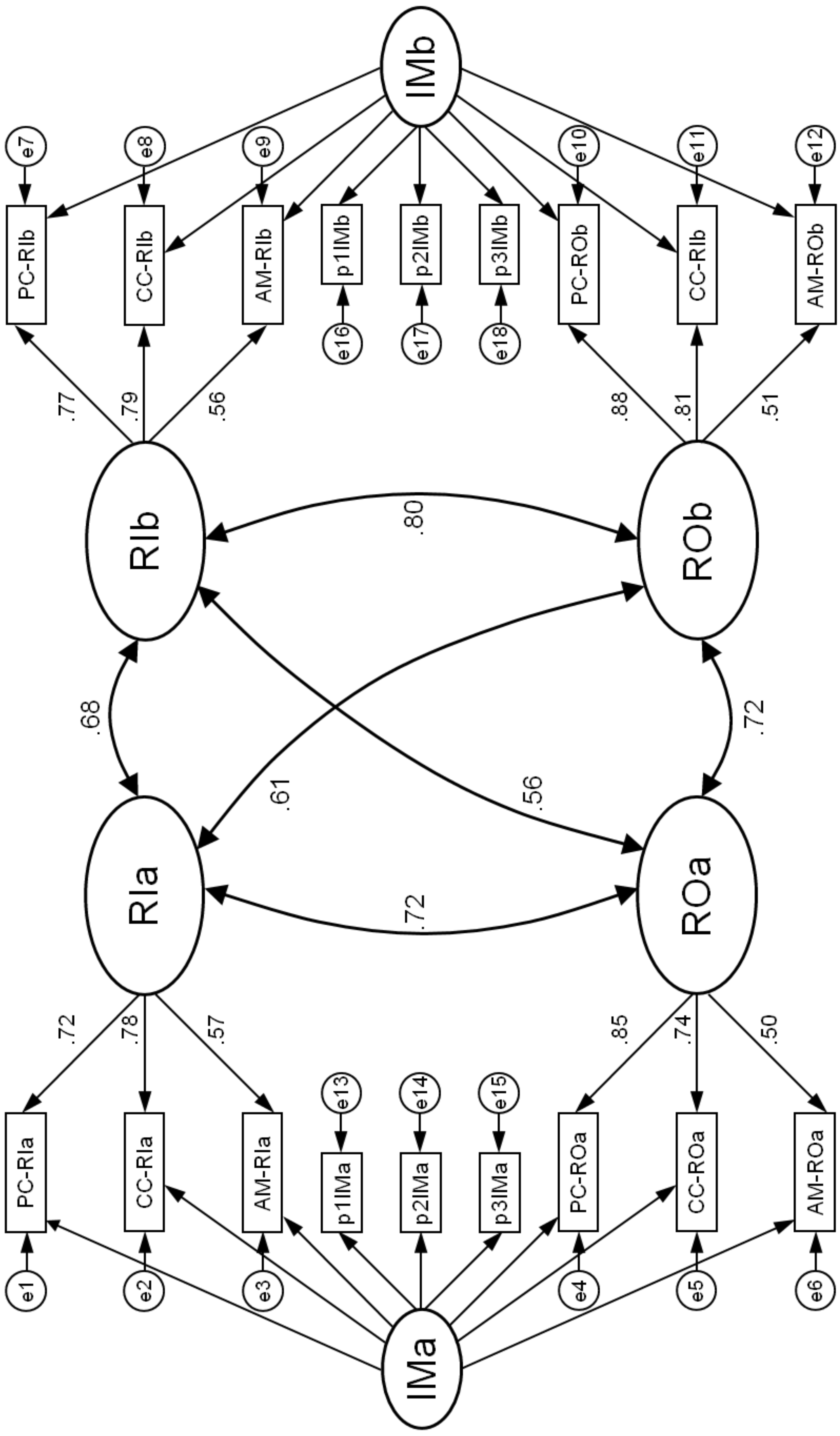

IMb
e7
e8
e9
e10
e11
e12
PC-RIb
CC-RIb
AM-RIb
p1IMb
p2IMb
p3IMb
PC-ROb
CC-RIb
AM-ROb
e16
e17
e18
.84
.82
.69
.81
.83
.47
RIb
ROb
.81
.79
.87
.67
.68
RIa
ROa
.74
.72
.83
.65
.75
.87
.46
e13
e14
e15
PC-RIa
CC-RIa
AM-RIa
p1IMa
p2IMa
p3IMa
PC-ROa
CC-ROa
AM-ROa
e1
e2
e3
e4
e5
e6
IMa

Figure 1.


IMb
IMa
RIb
ROb
RIa
ROa
PC-RIb
CC-RIb
AM-RIb
p1IMb
p2IMb
p3IMb
PC-ROb
CC-RIb
AM-ROb
PC-RIa
CC-RIa
AM-RIa
p1IMa
p2IMa
p3IMa
PC-ROa
CC-ROa
AM-ROa
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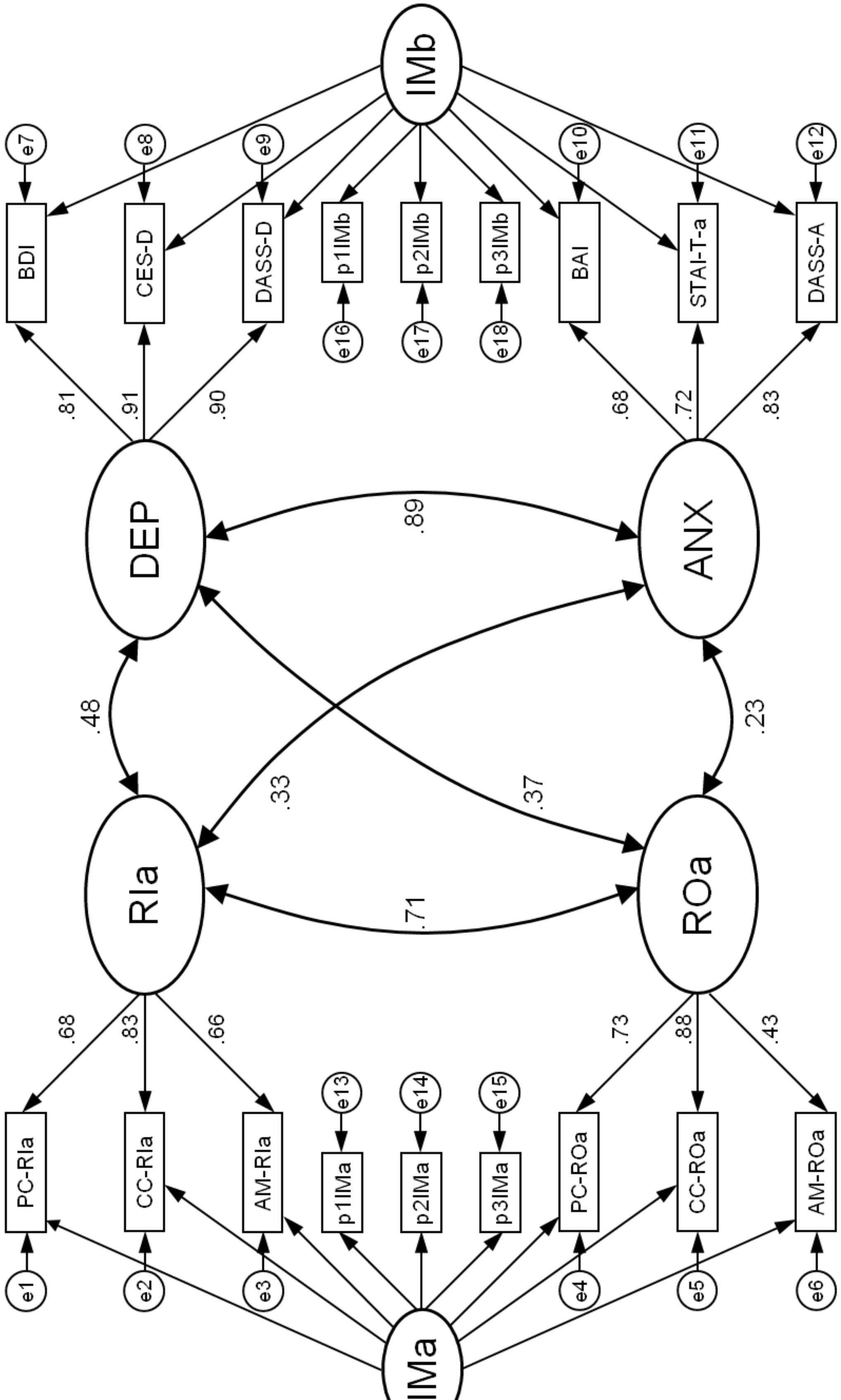
.50

Figure 2.


IMb
e7
e8
e9
e10
e11
e12
BDI
CES-D
DASS-D
p1IMb
p2IMb
p3IMb
BAI
STAI-T-a
DASS-A
e16
e17
e18
.81
.91
.90
.68
.72
.83
DEP
ANX
.89
.48
.23
.33
.37
RIa
ROa
.71
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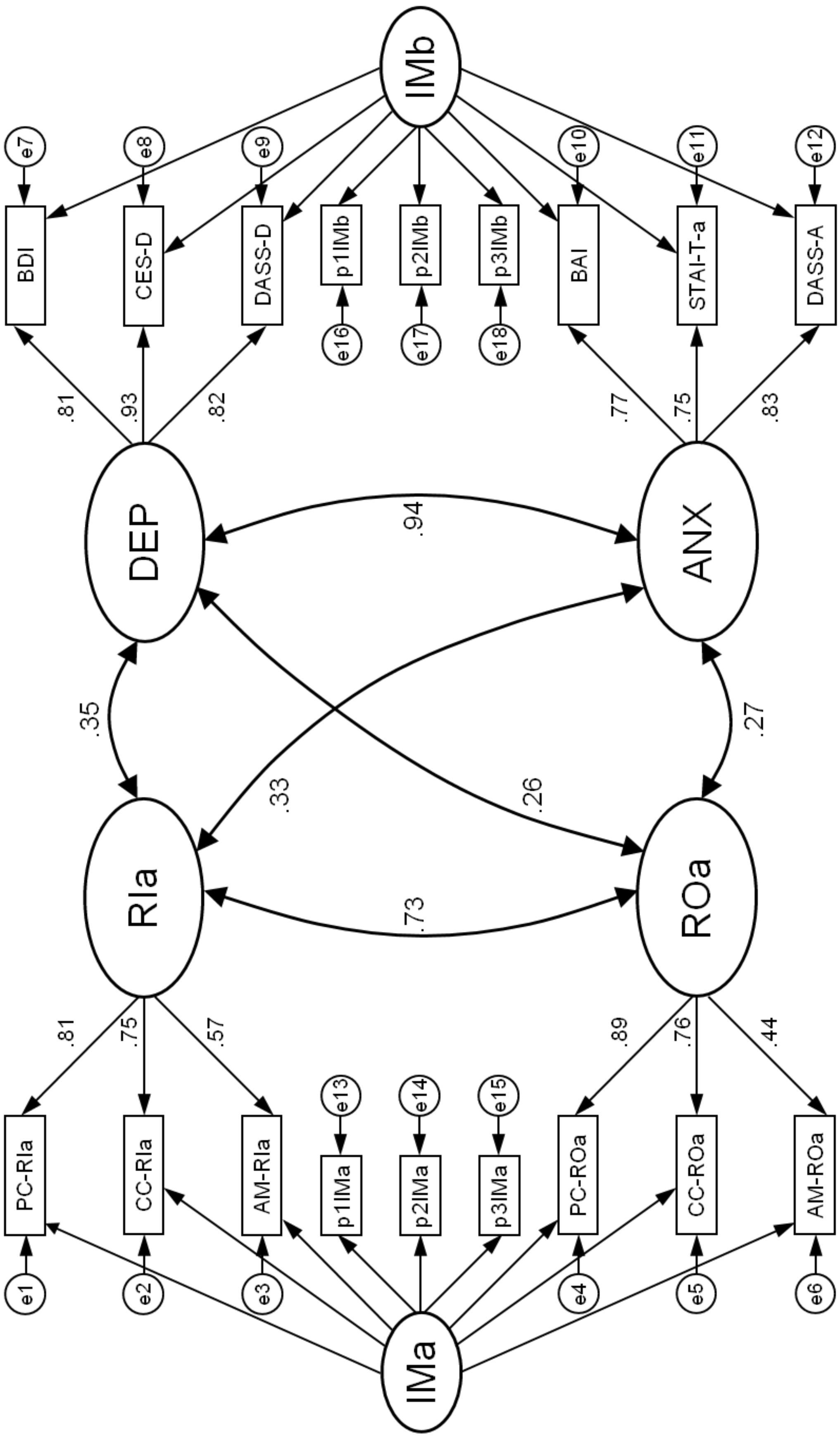
.83
.66
.73
.88
.43
e13
e14
e15
PC-RIa
CC-RIa
AM-RIa
p1IMa
p2IMa
p3IMa
PC-ROa
CC-ROa
AM-ROa
e1
e2
e3
e4
e5
e6
IMa

Figure 3.


IMb
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BDI
CES-D
DASS-D
p1IMb
p2IMb
p3IMb
BAI
STAI-T-a
DASS-A
e16
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e18
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.82
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DEP
ANX
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.26
RIa
ROa
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.57
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.44
e13
e14
e15
PC-RIa
CC-RIa
AM-RIa
p1IMa
p2IMa
p3IMa
PC-ROa
CC-ROa
AM-ROa
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e5
e6
IMa

Figure 4.