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## Language and the Symptoms of Mental Illness Connection via Abstract Representations of the Self and the World

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### ABSTRACT

The aim of the present study is to provide additional knowledge about the mediatory processes through which language contributes to the symptoms of mental illness. Although recent studies have provided insight about the relationship between language and the indicators of mental illness, the role of intervening variables in this connection has been ignored. The present investigation tested a structural equation model in which the need for the absolute truth about self and worry mediated the relationship of the gap between inner psychological experience and language with anxiety and depression. The results have provided support for the model and showed that the gap predicts both the need for absolute truth and worry which, in turn, predict the levels of anxiety and depression. The results have been discussed in the light of previous research, and implications for future research have also been considered.

### ARTICLE HISTORY

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### KEYWORDS

Language; need for absolute truth; worry; psychopathology

Previous research (e.g. Machado & Gonçalves, 1999; Buck, 1993) has found language to be associated with the indicators of mental illness or ill-being. One of the most important findings of the relevant research is that the disconnect or gap between language and inner psychological experience has critical implications for the study of psychopathology. Studies on Multiple Code Theory (Bucci, 1984; Fertuck, Bucci, Blatt, & Ford, 2004), for example, emphasized that clients with depression do not have a connection between words to denote bodily experiences and those inner experiences themselves; they seem to have a difficulty to use language as an expressive tool for their inner experiences. Bucci (1984) argues that individual efforts for connecting language and psychological experiences make it possible for individuals to make sense of their inner experiences. According to Bucci and Freedman's (1981) findings, low levels of referential activity, inability to verbalize inner psychological experiences with large amounts of concrete detail, was associated with depression. The authors found that most clinically depressed patients have a disconnection between language and emotional experiences and concluded that the levels of referential activity covaried with the levels of depression, both within and between individuals.

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Writing paradigm (Pennebaker, 1993) also emphasizes the importance of the representation of traumatic experiences by language in mental health given the finding that the written expression of traumatic experiences were found to be influential in reducing post-traumatic stress disorder symptoms. The basic premise of the Writing Paradigm is that transforming inner psychological experiences, whether it is traumatic or not, into language result in psychological and physical health because such a transformation would help assigning meaning, structure and coherence to these experiences (Pennebaker & Chung, 2011). As indicated by the authors, research findings consistently showed that writing about problematic experiences even for just a couple of days improved mental and physical health, even though the results of the recent meta-analysis concerning the effect of these interventions indicated modest effect sizes (Frattaroli, 2006).

In accordance with the Writing Paradigm and Multiple Code Theory, Şimşek (2010) proposed the concept of ‘gap between experience and language’ (GAP) referring to the distance between inner psychological experiences and the language used to denote these experiences. GAP refers to an individual perception of a lack of comprehending inner psychological experiences using the linguistic tools available. According to the author, the connection between words denoting personal/phenomenal experience and the experience itself is a critical issue in the construction of the self as well as in the regulation of the problematic emotional experiences. Şimşek defined two basic functions in the context of ordinary language use, the epistemic and the communicative, the lack of which underlies the phenomena of GAP. The epistemic function is related to an individual’s belief about the ability of the daily language they use as a reliable means to acknowledge inner psychological experiences. The communicative function, on the other hand, is a personal acknowledgment of this ordinary language as a reliable tool to communicate phenomenal experiences.

Earlier studies have investigated the mediators of the relationship between GAP and the symptoms of mental illness and shown that self-concept clarity (Şimşek & Kuzucu, 2012), self-reflection, self-rumination (Şimşek, 2013) and emotion regulation (Şimşek & Çerçi, 2013) are potential mediators. A more recent study by Bozanoglu, Şimşek, Altıntaş, and Kocayoruk (in press) showed also that GAP mediated the relationship between adolescents’ attachment to their parents and depression they experience. The current study aimed at expanding this line of investigation by emphasizing the mediator role of the abstract representations concerning the self and the outside world in the relationship of GAP with anxiety and depression as the symptoms of mental illness. As stated more clearly below, two inclinations of abstract and repetitive thinking, i.e. need for absolute truth as an inclination to find an abstract representation of the self, and, worry as an abstract representation of the surrounding world, are considered to be the mediators of the relationship between GAP and the indicators of mental illness. In other words, GAP is considered to be closely connected with both an endless search for an absolute truth about self and an abstract conceptualization of the outside world as a combination of possible threats, which in turn contribute negatively to the indicators of mental illness, depression and anxiety, in the present study. We choose these abstract representations as mediators because, as we shall explain in more detail in the next section, they are closely connected to and probably resulted from GAP and contribute to the indicators of mental illness.

Moreover, given that counseling or psychotherapy processes are largely based on the language used by clients, an examination of important mediators in the relationship between GAP and the indicators of mental illness would contribute to the clinical/counseling outcomes. Particularly the need for absolute truth is of special importance in this context since almost every counseling process starts due to a need for finding the truth about the self and gaining self awareness.

### ***The Relationship between Language and Abstract Representations***

Recent conceptualizations of self-focus have been underlined that there is both beneficial and detrimental kinds of self-focused attention. Reduced concreteness theory as a leading paradigm in this context advocates that in contrast to abstract thinking, concrete thinking is the main characteristic of repetitive self-focus such as worry and rumination. The reduced concreteness theory operationalize concrete thought as “distinct, situationally specific, unequivocal, clear, singular” while abstract thought as “indistinct, cross-situational, equivocal, unclear, aggregated” (Stöber & Borkovec, 2002, p. 92). Research indeed has shown that high-level abstractions (e.g. asking why instead of what or how) could result in mental health problems through their effects on overgeneralizations, lack of affect regulation or problem-solving. For example, Hixon and Swann (1993) demonstrated that “why” questions have a negative effect on mental health. The researchers indicated that when self-focus questions are formulated on an abstract level, they have harmful effects on mental health compared with the concrete forms. Self-focus was shown, on the other hand, to contribute to self-insight, when it focuses on concrete forms by “what” questions. Based on such findings, Watkins and Teasdale (2004) not only emphasized the negative effects of high-level abstract representations on mental health, but also emphasized the benefits of concrete evaluations for problem solving. They stated that self-regulation is easier through less abstract thinking and highlighted that abstract thinking increases the possibility to overgeneralize. As Watkins (2008) indicated, abstract thought is associated with overgeneralization and found to be a common factor in depression. It is clear, then, that to focus on the experiences of the self from a less analytical and concrete perspective (asking how) is more favorable for mental health than a more analytical and abstract focus on causes and meanings (asking why).

It is highly probable at this point that if one cannot find linguistic expressions for inner experiences, the representations of these experiences would suffer from having no concrete referents, which leads to a search for more abstract representations to make sense of them. Pennebaker and Chung (2011) underline the importance of translating emotions into words since such an analog-to-digital process has crucial effects on the way of thinking on these emotions. Indeed, Lyubomirsky and Lepper (1999) found that verbalizing problematic experiences through writing was more helpful than merely thinking about them since such a use of language helps individuals to organize these stressful experiences. The authors indicate that merely thinking about stressful experiences, in contrast to decode them into language, does not provide the content of thought with structure and meaning, leading individuals into repetitive and abstract thinking such as rumination or dwelling. A more recent study also provided findings showing

that expressive writing reduced the levels of abstract thinking, i.e. brooding as a kind of maladaptive rumination (Sloan, Marx, Epstein, & Dobbs, 2008).

In light of this literature, we propose that a persistent, i.e. trait, GAP would lead to a search for abstract representations concerning the personal/phenomenal world consisting of both self and the surrounding world. As Segerstrom, Stanton, Alden, and Shortridge (2003, p. 909) indicated, repetitive thought is the “process of thinking attentively, repetitively or frequently about one’s self and one’s world,” GAP, thus, could be expected to result in an inclination to a repetitive search for abstract representations, of which we focus on the two critical phenomena having crucial implications for mental illness: the need for absolute truth and worry.

Inspired by the works of Watkins and Teasdale (2004), Şimşek (2013) introduced the need for absolute truth (NAT) as a kind of self-analysis aimed to acquire absolute knowledge about the self. As a very new conceptualization in the self-consciousness literature, it refers to a repetitive search for stable, constant and objective knowledge, which is highly associated with a higher-order thinking capacity (Şimşek, Ceylandağ, & Akcan, 2013). NAT is a powerful wish for an abstract type of self-knowledge and self-relevant information as a rigid and inflexible conceptualization of the self, which aims to capture knowledge about personal experiences and the self. It refers to the absolute knowledge beyond personal experiences valid every time and for every situation, that is an overgeneralized truth. It represents, thus, one of the highest level representations about the self and was found to be positively related to psychopathology indicators such as depression, anxiety and self-rumination while negatively related to the mental health indicators such as self-concept clarity, self-esteem, and insight (Şimşek, 2013; Şimşek et al., 2013).

The effects of the GAP on the NAT, as indicated above, seem to be clear given that language is the main tool for making highly fluid inner experiences concrete and assigning meaning to them. The functions of language, in this respect, are the means through which the individual acknowledges inner psychological experiences. Words help to categorize and develop meaning (Owen, 1991) and especially figurative language enables insight and knowledge about the self (Barlow, Pollio, & Fine, 1977). According to Şimşek (2010), as the epistemic function increases, the levels of GAP decrease and what is felt becomes known for individuals. Communicative function of GAP is also about self-knowledge since sharing inner experiences helps people to gain knowledge about the self through emotional understanding (Howe, Aquan-Assee, Bukowski, Lehoux, & Rinaldi, 2001). Indeed, epistemic and communicative functions of language were shown to have a close connection with self-knowledge (Şimşek, 2010, Şimşek, 2013). An increase in the levels of GAP, consequently, could result in decreased levels of concrete thought, which probably leads to higher levels of abstract thought about the self and experiences. Thus, it is possible to argue that when language does not represent phenomenal experiences, these experiences become more problematic and coercive to individual and s/he would probably in need of an insistent search for higher-order or abstract conceptualizations about the self.

Second, GAP has also implications for worry given that worry has a close connection directly with language as well as abstract thinking. The most convincing support for the importance of language and abstract thinking comes from reduced concreteness theory.

According to Borkovec, Robinson, Pruzinsky, and DePree (1983, p. 10), worry “represents an attempt to engage in mental problem-solving on an issue whose outcome is uncertain but contains the possibility of one or more negative outcomes” Research findings provide strong evidence that the quality of the engagement, i.e. abstract verbal elaborations of or reduced concreteness concerning the problem, could be one of the main causes of worry (Stöber, 1998; Stöber & Borkovec, 2002). The main argument of Stöber and Borkovec is that individuals prefer using a verbal articulation of the worrying situation in order to escape aversive imagery related to it. Abstract verbal content, thus, eliminate the vivid representation of the worrying situation and resulted in a better emotional processing at the earlier periods of phenomenal worry experience. Later, however, such a manipulation would lead to poor problem solving strategies since there exists no concrete elements concerning the situation, which resulted in higher levels of worry. Dual-level information theory, on the other hand, underlines the detrimental effects of abstract thinking in worry (Sibrava & Borkovec, 2006). According to the theory, the schematic (or implicational) level consists of abstracted information from past emotional experiences and is not accessible to consciousness. The propositional level, however, is consciously accessible and contains concrete, episodic information. Research based on the manipulation of these two emotional processing levels found that dealing with information abstractly results in valenced emotion and low levels of emotional processing than does dealing with the information at the propositional level. It is clearly possible, then, to argue that the functions of language contribute to the concrete processing as it provides individuals with the ability to label and organize experiences into a self-system. To put it another way, a decrease in the levels of the functions of language could be connected to an increase in the inclination to think abstractly, which in turn could possibly contributes to heightened worry.

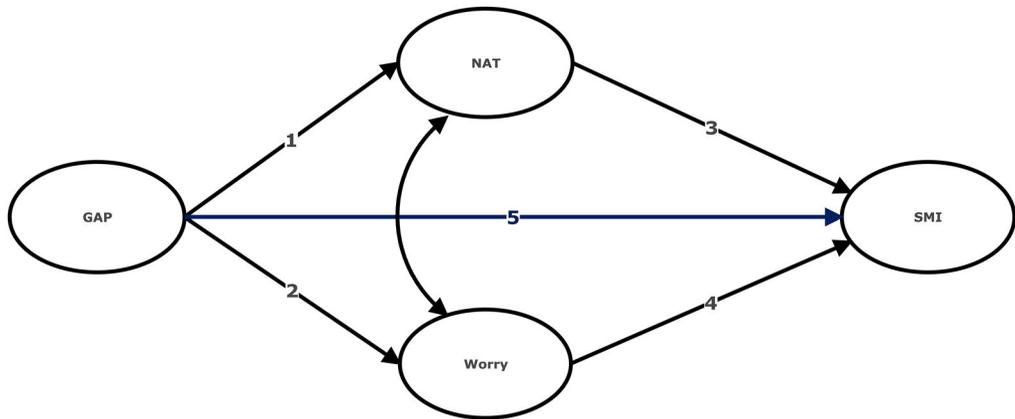
### ***Present Study***

Based on the literature mentioned above, the present research suggests that the relationship of GAP with the indicators of psychopathology is mediated by both NAT and worry that are repetitive and abstract representations concerning self and the world, respectively. In order to clarify the processes by which GAP is associated with symptoms of mental health, it seems important to illuminate the role of the need for absolute truth and worry. According to the model depicted, GAP is related to both NAT and worry, which in turn connected to the ill-being latent variable defined by the most important indicators of mental illness such as depression and anxiety in the present research. We tested this hypothesis by using a structural equation model (Figure 1).

## **Method**

### ***Participants and Procedure***

The number of 390 individuals participated in the study in Turkey. Participant was voluntary and following the data screening procedure (Normality of each variable, missing-value pattern and presence of outliers) a sample of 374 was used for analyses. Mean age of the sample was 25.12 (SD = 8.55) ranging from 18 to 67 years. Of the participants,



**Figure 1.** The proposed model of the relationships among GAP, NAT, Worry and Mental Health. Notes: GAP = The gap between experience and language; NAT = Need for absolute truth; SMI = Symptoms of Mental Illness; observed variables are not shown in the model.

249 were female (66.9%) and 123 were male (33.1%). The data were collected from a non-clinical sample. The age distribution of the samples is unbalanced. A preparatory analysis should be conducted on the effect of age using statistical methods.

A battery of self-report measures was administered to the participants with an overall administration time of approximately 30 min. All participants completed a written informed consent form. Participants were volunteers and no incentive was given to them. No personal identifying information was collected. Participants were asked to complete questionnaires including the measures of beliefs about the functions of language, need for absolute truth, worry and mental health.

## **Variables and Measures**

### ***The Gap between Experience and Language***

Beliefs about the Functions of Language Scale (BAFL, Şimşek, 2010) was developed in Turkish to assess subjects' perception of association between language and inner experiences by six studies. Likert-type scale has twelve items with acceptable internal consistencies,  $\alpha = .70$  and  $\alpha = .83$ , respectively, and good test-retest reliability ( $r = .82$ ). Internal consistency of the present study is  $\alpha = .87$ . Factorial validity studies indicated that the scale consisted of the two factors with acceptable reliability estimates. Items had at least .46 factor loadings and the correlation between factors was found to be .38. Five of the items include epistemic factor such as "I believe that the real meaning of my experiences is beyond language" and "I think there is a gap between my feelings and the corresponding words". The rest, seven items, reflect communicative function such as "I do not feel people can fully understand the words I use to express myself" and "I feel words can reflect my feelings exactly to other people". Validity studies reported moderate or strong correlations with many mental illness indicators such as depression ( $r = .50$ ), anxiety (.53), and somatization (.41) as well as empathic tendency (−.37) and self-concept clarity (−.47).

### ***Need for Absolute Truth (NAT)***

NAT (Şimşek, 2013) was developed in Turkish and used to measure the desire to have absolute knowledge about the self. The NAT has been found to have an acceptable internal consistency ( $\alpha = .75$ ) and good test-retest reliability ( $r = .72$ ). Five-point Likert-type scale has one factor and five items such as “I always try to find “the facts” about me” and “I always think about “the facts” about me”. This factor accounted for 51% of the variance with an eigenvalue of 2.56. According to the confirmatory factor analysis findings, factor loadings ranged from .55 to .89 and yielded t-values ranging from 9.19 to 22.62. The scores on the NAT Scale were found to be moderately correlated with mental health indicators such as depression ( $r = .51$ ), anxiety ( $r = .47$ ), self-concept clarity ( $r = .58$ ) and self-esteem ( $r = .42$ ) as well as with some measures of self-focus such as self-rumination ( $r = .54$ ), self-reflection ( $r = .63$ ), and insight ( $r = -.28$ ).

### ***Worry***

Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) was used to measure subjects' level of worry. Scale was developed to assess the proneness to worry in terms of uncontrollability of trait like worry, frequency and intensity. It is a five-point Likert-type scale with 16 items. In the present study, the Turkish version of the questionnaire that was adapted by Boysan, Keskin, and Beşiroğlu (2008) was administered. Internal consistency of the questionnaire was  $\alpha = .88$ . Correlation between PSWQ total scores and Beck Depression Inventory was  $r = 0.45$ . PSWQ is significantly correlated with Beck Anxiety Inventory  $r = 0.46$ . The correlation between PSWQ and Rosenberg Self Esteem Scale was  $r = -0.36$ . Internal consistency of the present study is  $\alpha = .91$ .

### ***Symptoms of Mental Illness***

Depression and anxiety sub-scales of Brief Symptom Inventory (BSI) were used to measure individuals' depression and anxiety symptoms. Of the 53 item scale 12 items were related to depression and 13 items were related to anxiety. It is a 5-point Likert-type scale. The scale has a good internal consistency reliability ranging from .71 to .85. It is developed by Derogatis (1992) and adapted to Turkish by Şahin and Durak (1994). The adapted Turkish version has five subscales; anxiety, depression, negative self, somatization and hostility. In the present study, Alpha coefficients for depression and anxiety sub-scale were found to be .87 and .84, respectively.

### ***Strategy of Analysis***

Following Anderson and Gerbing's method (1988), the measurement model is estimated prior to the structural model. After the descriptive statistics and correlation analysis, measurement model was tested before the full structural model. As SEM is used for theory testing, alternative models must be considered in order to detect whether the proposed model fits the data better (Green, 2015). Therefore, two alternative models were also tested against the proposed model in order to ensure that the model fitted the data due to its theoretical soundness, not because of a statistical coincidence.

**Table 1.** Means, Standard Deviations, Intercorrelations of Observed Variables.

Observed variables	M	SD	1	2	3	4	5	6	7	8	9	10	11
GAP													
1. Epis	15.14	4.15	–										
2. Com	19.94	5.92	.69**	–									
Worry													
3. Worry 1	13.77	3.88	.23**	.28**	–								
4. Worry 2	17.51	4.35	.23**	.28**	.83**	–							
5. Worry 3	13.50	3.84	.15**	.25**	.78**	.81**	–						
SMI													
6. Depression	30.01	8.61	.43**	.44**	.51**	.55**	.48**	–					
7. Anxiety	27.08	7.94	.42**	.47**	.56**	.56**	.49**	.80**	–				
Need For Truth													
8. N1	3.51	1.04	.27**	.22**	.15**	.10	.09	.20**	.20**	–			
9. N2	3.40	1.15	.36**	.40**	.27**	.29**	.22**	.40**	.36**	.21**	–		
10. N3	3.88	1.36	.28**	.27**	.20**	.16**	.09	.24**	.25**	.35**	.54**	–	
11. N4	3.88	1.14	.30**	.32**	.22**	.19**	.16**	.30**	.33**	.47**	.43**	.58**	–
12. N5	3.29	1.02	.36**	.33**	.19**	.14**	.12*	.30**	.28**	.42**	.25**	.31**	.53**

Notes:  $N = 374$ , GAP = Gap between language and experience; NFT = The Need for Absolute Truth; NFT1-5 = Five parcels from the Need for Absolute Truth Scale; Worry 1, 2 and 3 = Three parcels from the Worry Scale; SMI = Symptoms of Mental Illness.

\* $p < .05$ ; \*\* $p < .01$ .

## Results

### Preliminary Analyses

Means, standard deviations, and zero-order correlations for the 12 measured variables are shown in Table 1.

The distribution of the variables was scanned by using skewness (an index of steepness of score distribution) and kurtosis (an index of asymmetry of distribution) value. All values were less than 1.5, ranging from  $-0.092$  to  $-1.35$  for skewness and from  $-0.68$  to  $3.65$  for kurtosis, indicating that there was no problem with normal distribution for any variable and all variables are normally distributed in the sample. In addition to the skewness and kurtosis analyses, Kolmogorov-Smirnov test was used and the results ( $p > .05$ ) supported the normality.

In order to test the multivariate normality of the distribution of a group of variables the Mardia based Kappa kurtosis index was calculated. Multivariate kurtosis was investigated with the normalized estimate of Mardia's (1970) kappa and there was evidence of kurtosis. Values  $> 1.96$  mean there is significant kurtosis, which shows that there is no multivariate normality. Mardia's coefficient (8.23) indicated no multivariate normality. The data suggested the use of the LISREL WLS estimation method for ordinal variables (Jöreskog & Sörbom, 2003) polychoric correlations matrix and the asymptotic covariance matrix were used as input for data analysis. Therefore, appropriate estimation procedures were applied in both measurement and structural models.

The gender and age distribution of the samples is unbalanced. A preparatory analysis conducted on the effect of gender and age using statistical methods ( $t$ -test and measures of central tendency). Findings indicated that there weren't any gender differences. For each observed variables, the differences between mean scores of groups were examined and  $t$  values revealed no significant differences, values changed between 1.21 ( $p > .05$ ) and 2.51 ( $p > .05$ ). The measures of central tendency was also supported this finding.

**Table 2.** Correlations among the Latent Variables with (above diagonal) and without (below diagonal) Control Variable.

Latent variable	1	2	3	4
GAP	–	.44**	.29**	.50**
Need for truth	.46**	–	.25**	.39**
Worry	.30**	.25**	–	.60**
SMI	.50**	.41**	.60**	–

Notes:  $N = 374$ .\*\* $p < .001$ . SMI = symptoms of mental illness.

The age effect was also checked. The structural equations model was tested by taking AGE as a control variable, paths from AGE to all observed variables of the other latent constructs were added, while the covariance of latent AGE constructs with other latent constructs was constrained to be zero (Johnson, Rosen & Djurdjevic, 2011). Additionally, the variance of AGE was set to 1.00 in order to achieve identification.

As seen in Table 2, mental illness symptoms had positive correlations with each factor of GAP, parcels of worry and parcels of the Need for Truth. Parcels of the Need for Truth, except the parcel N1, had a moderate correlation with mental illness factors and worry parcels.

### **Test of the Measurement Model**

SEM is a multivariate strategy of analysis including the test of measurement and structural models. Before a structural equation model is tested, the confirmatory factor analysis is conducted to examine whether a measurement model provides an acceptable fit to the data. Since the measurement model which has the greatest number of free parameters is the least restricted model, it is impossible for any structural model having a mediational hypothesis to fit the data better than a measurement model.

In this study, the measurement model was estimated by using the Maximum-Likelihood Method in the LISREL 8.8 program (Jöreskog & Sörbom, 2003). The Maximum-Likelihood estimation method created fit indices that are less likely to be influenced by sample size and distribution than the methods such as Weighted Least Squares or Unweighted Least Squares (Hu & Bentler, 1998). Moreover, the non-convergent values of the factor loadings in the measurement and structural models have been considered problematic in model testing, which is called interpretational confounding by Anderson and Gerbing (1988). The indicators, or the measured variables, in the model were defined according to a priori factor structures of the constructs demonstrated by the earlier research.

The measurement model specified the posited relations of the observed variables to their underlying constructs allowed to intercorrelate freely. Four latent variables were used in the structural equation model testing: The gap between experience and language (GAP), need for absolute truth (NAT), worry and mental illness symptoms. The latent construct GAP was defined by the sum scores of its sub-scales, namely communicative and epistemic functions. The sum scores on Depression and Anxiety sub-scales of the Brief Symptom Inventory defined the latent construct “symptoms of mental illness” (SMI). The NAT Scale is a one-dimensional measure with five items that are used as observed variables. Finally, three parcels created by the items of PSWQ to define the

latent variable worry. Item parceling is a method that normalizes the distribution of observed variables and increases the reliability of these indicators (Little, Cunningham, Shahar, & Widaman, 2002).

Before the measurement model tested, the correlations between all latent variables in the model were checked and found all statistically significant ( $p < .01$ , see Table 2). After the control variable, there are still moderate correlation between the variables. The correlations among the constructs (Table 2) indicated very small changes.

The test of the measurement model resulted in an acceptable fit to the data, as indicated by the following goodness of fit statistics:  $\chi^2(47, N=374)=116.38$ ;  $\chi^2/df = 2.46$ ; GFI = 0.99; CFI = 0.99; SRMR = 0.060; RMSEA = 0.063 (90 percent confidence interval for RMSEA = 0.048–0.077). All loadings of the measured variables on the latent constructs were large and statistically significant (standardized values ranged from 0.26 to 0.87,  $p < .01$ ).

The measurement model was tested once more, this time with the AGE construct as a control variable. The model produced better fit to the data:  $\chi^2(47, N=374)=99.57$ ;  $\chi^2/df = 2.11$ ; GFI = 0.99; CFI = 0.99; SRMR = 0.057; RMSEA = 0.055 (90 percent confidence interval for RMSEA = 0.040–0.070). As Table 3 demonstrates, all loadings of the measured variables on the latent constructs were large and statistically significant (standardized values ranged from 0.31 to 0.89,  $p < .01$ ).

### Test of the Structural Models

The mediational hypotheses were tested by examining the fit of a series of structural models to the data. Figure 1 summarizes the full number of hypothesized relations between the latent variables. The numbers on the figure refer to the relationship of GAP to SMI with the mediatory role of NAT and worry (1, 2, 3, and 4) or without such mediation (5).

**Table 3.** Factor Loadings, Standard Errors, and t-Values for the Measurement Model.

Measure and variable	Unstandardized factor loading	SE	t	Standardized factor loading
GAP				
Epis	0.73	0.03	19.17	0.67
Com	0.80	0.03	20.79	0.80
SMI				
Dep	0.65	0.03	16.62	0.80
Anx	0.75	0.03	20.31	0.87
Worry				
WP1	0.73	0.03	23.09	0.84
WP2	0.76	0.03	24.02	0.89
WP3	0.71	0.03	21.96	0.78
Need For Truth				
NFT1	0.56	0.04	13.84	0.31
NFT2	0.53	0.04	12.10	0.39
NFT3	0.67	0.03	18.67	0.46
NFT4	0.88	0.02	32.56	0.79
NFT5	0.66	0.03	18.51	0.46

Notes:  $N = 374$ , Epis = Epistemic Function; Com = Communicative Function; Dep = Depression; Anx = Anxiety. Worry 1, 2 and 3 = Three parcels created from the Worry scale; NFT1–NFT5 = Five items from the Need for Absolute Truth Scale; SMI = Symptoms of Mental Illness.

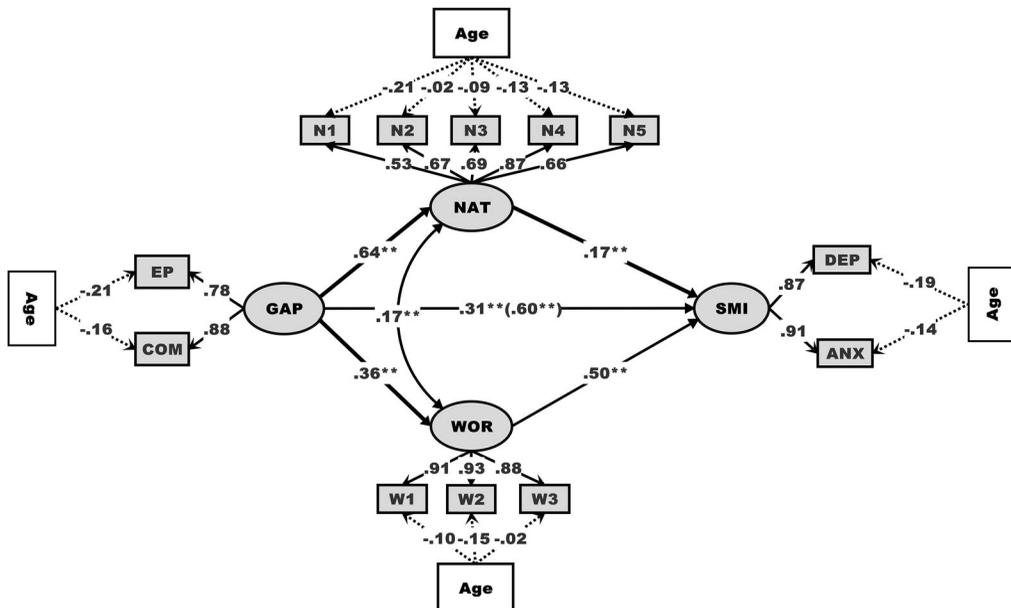
With the AGE construct as a control variable, the tests of mediation were performed by examining whether there were differences between the partially mediated model represented in Figure 1, which includes the direct effect from GAP to Mental Health (path 5), and the full mediation model in which this path is omitted.

Testing the mediation effect of worry and NAT with respect to SMI where the path 5 was set to zero, resulted in the following goodness of fit statistics:  $\chi^2(49, N=374) = 117.92$ ;  $\chi^2/df = 2.40$ ; GFI = .99; CFI=.99; SRMR= 0.073; RMSEA = 0.061 (90 percent confidence interval for RMSEA = 0.047–0.076).

Test of the partial mediated model resulted in an acceptable fit to the data as indicated by the following goodness of fit statistics:  $\chi^2(47, N=374) = 100.62$ ;  $\chi^2/df= 2.14$ ; GFI = .99; CFI = .99; SRMR = 0.058; RMSEA = 0.054 (90 percent confidence interval for RMSEA = 0.039–0.069). These results show that the partial mediation model worked better than the full mediation model because the chi-square difference test (0.17, 2:  $p < .001$ ) indicated a difference between the models, and the path from GAP to SMI is required to achieve a better fit to the data.

Standardized estimates for the paths in the model are represented in Figure 2. As can be seen from Figure 2, the estimation of the total effect of GAP on SMI is 0.60 (SE:0.06) and after the mediators is included in the model, direct effect of GAP on SMI reduced to .31 (SE:0.05)

Compared to the saturated model, lower values of AIC and ECVI indicate a better model fit (Jöreskog & Sörbom, 1993). The AIC and ECVI statistics were 200.32 and 0.54, respectively, and they supported the model in which the path is retained. It is clear



**Figure 2.** Standardized parameter estimates for the mediation model with age controlled for. Notes: EP = Epistemic function, COM = Communicative function, GAP = Gap between experience and language, N1-N5 = The items of the Need for Absolute Truth Scale, NAT = Need for absolute truth, W1-W3 = Parcels created from the PSWQ, WOR = Worry, SMI = Symptoms of Mental Illness, DEP = Depression, ANX = Anxiety. Dashed lines refers to the effect of age on the observed variables.

from the findings that the relationship between GAP and SMI is partially mediated by NAT and worry.

According to the findings, 41% of the variance in NAT was explained by GAP, 13% of the variance in Worry was explained by GAP. GAP, NAT and worry in turn, accounted for 63% of the variance in SMI. Clearly, LISREL estimates for the indirect effects of GAP (0.31,  $p < .01$ ) on SMI through NAT and worry verified the partially mediator role in the model.

Although the structural model resulted in a good fit to the data, the mediation hypotheses were examined by calculating bootstrap confidence intervals. The bootstrapping procedure is used to determine whether or not the indirect pathways were significantly different from zero (Shrout & Bolger, 2002). This method is based on testing the significance of the indirect paths from the independent variable (GAP) to the mediators (WORRY and NAT) and from the mediators to the dependent variable (SMI). Bootstrapping produces a large number of samples from the dataset and uses them to obtain estimates of the standard errors. In the present study, 10,000 bootstrap samples were drawn. The interval confidence of these standard errors is considered when testing the significance of indirect effects. These standard errors were used to calculate the 95% confidence interval (CI) for each indirect effect. Significant mediation is indicated when the upper and the lower limits of the 95% CI do not include zero. The final model excluded zero at both the 95% confidence intervals (the mediation role of worry between GAP and Mental Health = .42–.83; the mediation role of NAT between GAP and Mental Health = .38–.91). Confidence intervals for the indirect effects provided support for the mediation hypotheses. More specifically, there was a statistically significant indirect effect of GAP on Mental Health, through both NAT and Worry. That is, NAT and Worry mediates the relationship between GAP and mental health.

## Discussion

The structural equation model tested in the present research provided preliminary support for the mediator roles of worry and NAT in the relationship of the gap between language and experience with the symptoms of mental illness in a non-clinical sample. The basic assumption of the present study was that GAP contributes to higher-order thinking processes through which individuals try to construe their internal and external world using abstract representations. Such a process through these repetitive representations, in turn, was expected to contribute to mental illness indicators such as depression and anxiety. The results of the present study supported these expectations and showed that NAT and worry mediated the relationship between GAP and these basic indicators of mental illness. Adding age of the participants into the structural equation model as a control variable did not change the whole picture.

As formulized by Şimşek (2010), GAP refers to experiencing language as a lack of means of representing personal reality to the individual her/himself (epistemic function) and to others (communicative function). Given that language serves as one of the basic mediums by which personal reality is constructed and reconstructed (Neimeyer & Mahoney, 1995), an experienced gap between a problematic experience and language is expected to have an effect on repetitive thinking such as NAT and worry in searching

for certainty about self and the surrounding world. Research findings (Engels et al., 2007) support such inclinations and show that individuals exhibited greater activation of the left inferior frontal gyrus, a brain region playing an important role in language and speech production, when exposed to a problematic situation. Moreover, research also provided evidence that brain activity associated with speech production decreased in individuals with generalized anxiety disorder after receiving either pharmacological (Hoehn-Saric, Schlund, & Wong, 2004) or non-pharmacological treatment (Borkovec, Ray, & Stober, 1998). These findings indicate that problematic experiences urge individuals to use language as a means of elaborating the situation and thus making sense of it. Finally, support for the effects of language on repetitive thinking comes from a recent study (Francis, Hawes, Abbott, & Costa, 2018) providing evidence that the verbal ability of the children aged 9 to 15 years has an indirect effect on worry *via* intolerance of uncertainty. In other words, high verbal intelligence negatively associated with intolerance of uncertainty which, in turn, positively correlated with worry.

Morin (2006) argues with the findings of neuroimaging studies that the personal use of language, i.e. inner speech, helps individuals to have a rich and well articulated self-knowledge and higher-levels of self-awareness, an intrapersonal model of self-information acquisition. Moreover, the author indicates that inner speech has also an indirect effect on self-knowledge through interpersonal conversations. Accordingly, individuals are influenced by the significant others' appraisals, which affect one's inner speech about her/himself, which is called interpersonal mode of self-information acquisition.

Similarly, Dimaggio, Vanheule, Lysaker, Carcione, and Nicolo (2009) indicate that language as the only means for inner speech or discourse provides individuals with the capacity to form an integrated view of self by making them able to form questions and answers both intra and interpersonal processes. The authors, then, presents findings from brain imaging studies indicating that the damage in language areas are correlated with the quality of inner speech which in turn contributes to poor self-reflection. Morin (2006) similarly differentiate basic levels of self-consciousness like sensorimotor awareness or awareness of other individuals from higher-levels of self-awareness or meta self-awareness and indicate that the latter requires language.

It is clear, then that the GAP has a special importance at this point given that language has been considered to be the basic tool for making highly fluid inner experiences concrete and accessible to consciousness (Şimşek, 2010). Human beings are distinguished from other organisms by a sophisticated language and its complex relations with inner psychological experiences. Şimşek (2010) used Russell's (1912) distinction between "knowledge by acquaintance" and "knowledge by description" as a useful model in order to understand the (dis)connect between language and inner experiences. From this perspective, the knowledge by acquaintance refers to the direct and the immediate nature of bodily experiences; it is the pure presentation of experiences from senses without any judgment. Knowledge by description, on the other hand, represents formation of linguistic symbols for felt experiences.

Although Russell considered knowledge by acquaintance a more direct and genuine kind of truth, this is hardly viable when the issue is inner psychological experiences. Such experiences are hard to capture by the individual since there is no concrete referents corresponding for these experiences and this is especially true for the problematic

emotional experiences. Musacchio (2002) call subjective experiences phenomenal knowledge which is language-independent representations although they are absolute requirement for developing propositional knowledge, or knowledge by description. The author insists that the phenomenal and the propositional knowledge are dependent on fundamentally different neurobiological processes, which results in an inevitable gap between them.

Consequently, as Buck (1993) stated, such phenomenal experiences are not so easy to acknowledge and individuals should educate themselves concerning putting subjective experiences such as emotions, feelings, and desires (knowledge by acquaintance) into words. Indeed, people obtain information about their experiences and become competent to think about their mental states by language (Buck, 1993; Ivey, 1986; Morin, 2006). In other words, creation of meaning can only be possible through knowledge by description both in the therapeutic processes (Clarke, 1989) and in the daily life. Bucci (1984) makes similar categorizations and names the two processes as symbolic and sub-symbolic representations. Sub-symbolic representations, just like the knowledge by acquaintance, are the information from five senses, while symbolic representations refer to the symbolizations of sub-symbolic representations just like the knowledge by description.

Such a lack of self-information would have an effect on a need for self-knowledge, i.e. NAT as a kind of repetitive, higher-order thinking. Consistently, earlier research found that GAP and having a clear picture of the attributes of the self (self-concept clarity) are strongly and negatively correlated (Şimşek & Kuzucu, 2012). Şimşek (2013) indicates that NAT is probably the highest-order thinking about the self given that it refers to a kind of abstract thinking that aims to capture overgeneralizations about the self and rules about personal behavior that are independent from the situation. The results of the present study showed that higher levels of GAP experienced by the individual is associated with higher levels of NAT. It is an expected result given that having no words corresponding to the concrete aspects of the experience would contribute to an obsessive need for finding more abstract and higher-order representations of the self, that is, NAT.

Second, GAP was also found to be strongly associated with worry in the present research. The findings of the present research indicated that higher levels of worry could result from GAP experienced by individuals. As individuals are prone to or have a lack of concrete verbalizations concerning threats, they are more likely to experience higher levels of worry, which leads to depression and anxiety. Worry can be conceptualized as concerns about the perceived threat (Zuellig & Borkovec, 1996) and verbalization has been used as a strategy for abstraction, disengagement, and inhibition of emotional arousal associated with feared stimuli (Tucker & Newman, 1981). Abstract thought in response to feared stimuli decreases emotional arousal. Thus, worry related thought contains words and sentences of lowered concreteness (Stöber, 1998, Stöber, Tepperwien, & Staak, 2000). Consistent with this assumption, research showed that concrete words elucidate more concrete and vivid imagery (Paivio & Marschark, 1991). Conceptualizing outside world without such a concreteness would be more likely to result in worry, since worry and problem elaboration tasks are found to be inversely associated as Stöber (1998) clearly indicated. It is plausible to argue that finding

corresponding verbalizations for inner psychological experiences also means finding referents that are concrete and easy to elaborate. Consequently, as GAP increases concrete thinking decreases, which brings about high-level, pathological worry.

The findings provided by the present research have important implications for mental health interventions. The last decade of research has provided valuable insights into the role of language in mental health by focusing on the benefits of expressive writing. Research findings clearly showed that expressive writing for just three sessions contribute to mental and physical well-being (Pennebaker & Chung, 2011). However, the most recent meta-analysis showed that the effects of emotional disclosure were modest, and its efficacy was affected by a number of variables (Frattaroli, 2006).

The findings of the present research imply that the main contribution of using language as an expressive agent, might be through making problematic inner experiences, which is ineffable in most cases, more concrete, lower-level constructions. Indeed, Pennebaker and Graybeal (2001) assume that expressive writing contributes to mental health by changing the way individuals thought about the event. It is probable to argue that two kinds of higher-order thinking, NAT and worry, could be considered as mediators for the effectiveness of expressive writing procedures. O'Connor, Walker, Hendrickx, Talbot, and Schaefer (2013), in this respect, indicated that the reason for their findings showing no effectiveness of writing protocol might be individuals' propensity to engage in perseverative thinking about stressful events. Indeed, Gortner, Rude, and Pennebaker (2006) found that the effectiveness of expressive writing on the levels of depression is mediated by brooding.

Future research may test the hypothesis that GAP might be a moderator for the effectiveness of expressive writing. That is, the effectiveness of expressive writing might be moderated by the levels of GAP experienced by the individual. Past research showed that expressive writing might not be beneficial for the individuals who are already expressing their emotions in daily life. Gortner et al. (2006) mention the research findings indicating that the individuals with high levels of alexithymia, fear of social rejection, and suppression benefited more from expressive writing. The authors indicate that expressive writing might be most beneficial for those who are not able or willing to express their emotions. Expressive writing, thus had little added value for such individuals. It is highly probable then to argue that individuals with lower levels of GAP might not be benefited from expressive writing since these individuals may already be sharing their problems with close others. Future research should tested this hypothesis given that GAP is highly associated with empathic tendency as well as interpersonal sensitivity.

Although we used advanced statistical procedures to examine direct and indirect effects of GAP on the symptoms of mental illness through NAT and worry in the present study, several limitations should be noted. The current study is based on nonclinical samples; thus the findings cannot be generalized to clinical populations. Another important limitation is that the data is obtained using self-report measures. Future research should use multi-trait multi-method analysis with multi-informant data in order to assure the validity and to control bias in the measurement. Although the present research has contributed a new explanation to the literature, the hypotheses were tested by cross-sectional data. Future research should test the hypotheses using experimental or longitudinal data.

## Conflict of Interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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## References

- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411–423. doi:10.1037//0033-2909.103.3.411
- Barlow, J. M., Pollio, H. R., & Fine, H. J. (1977). Insight and figurative language in psychotherapy. *Psychotherapy: Theory, Research & Practice*, *14*, 212–222. doi:10.1037/h0086530
- Borkovec, T., Robinson, E., Pruzinsky, T., & DePree, J. (1983). Preliminary exploration of worry: Some characteristics and processes. *Behaviour Research and Therapy*, *21*(1), 9–16. doi:10.1016/0005-7967(83)90121-3
- Borkovec, T. D., Ray, W. J., & Stober, J. (1998). Worry: A cognitive phenomenon intimately linked to affective, physiological, and interpersonal behavioral processes. *Cognitive Therapy and Research*, *22*(6), 561–576.
- Boysan, M., Keskin, S., & Beşiroğlu, L. (2008). Penn State Endişe Ölçeği Türkçe formunun hiyerarşik faktör yapısı, geçerlik ve güvenilirliği (Assessment of hierarchical factor structure, reliability and validity of Penn State Worry Questionnaire Turkish version.). *Klinik Psikofarmakoloji Bülteni (Bulletin of Clinical Psychopharmacology)*, *18*(3), 174–182.
- Bozanoğlu, İ., Şimşek, Ö. F., Altıntaş, & Kocayörük, E. (in press). Revisiting attachment to parents and depression link in adolescence: The importance of language use and emotion regulation. *Current Psychology*. doi:10.1007/s12144-017-9714-5
- Bucci, W. (1984). Linking words and things: Basic processes and individual variation. *Cognition*, *17*(2), 137–153. doi:10.1016/0010-0277(84)90016-7
- Bucci, W., & Freedman, N. (1981). The language of depression. *Bulletin of the Menninger Clinic*, *45*(4), 334–358.
- Buck, R. (1993). What is this thing called subjective experience? Reflections on the neuropsychology of qualia. *Neuropsychology*, *7*(4), 490–499. doi:10.1037/0894-4105.7.4.490
- Clarke, K. M. (1989). Creation of meaning: An emotional processing task in psychotherapy. *Psychotherapy: Theory, Research, Practice, Training*, *26*(2), 139–148.
- Derogatis, L. R. (1992). *The Brief Symptom Inventory-BSI administration, scoring and procedures manual-II*. Clinical Psychometric Research Inc.
- Dimaggio, G., Vanheule, S., Lysaker, P. H., Carcione, A., & Nicolo, G. (2009). Impaired self-reflection in psychiatric disorders among adults: A proposal for the existence of a network of

- semi independent functions. *Consciousness and Cognition*, 18(3), 653–664. doi:10.1016/j.concog.2009.06.003
- Engels, A. S., Heller, W., Mohanty, A., Herrington, J. D., Banich, M. T., Webb, A. G., & Miller, G. A. (2007). Specificity of regional brain activity in anxiety types during emotion processing. *Psychophysiology*, 44(3), 352–363. doi:10.1111/j.1469-8986.2007.00518.x
- Fertuck, E. A., Bucci, W., Blatt, S. J., & Ford, R. Q. (2004). Verbal representation and therapeutic change in analtic and introjective inpatients. *Psychotherapy: Theory, Research, Practice, Training*, 41(1), 13–25. <http://dx.doi.org/10.1037/0033>. doi:10.1037/0033-3204.41.1.13
- Francis, R., Hawes, D. J., Abbott, M. J., & Costa, D. S. (2018). Cognitive mechanisms for worry in early adolescence: Re-examining the role of high verbal intelligence. *Personality and Individual Differences*, 120, 179–184. doi:10.1016/j.paid.2017.08.04
- Frattaroli, J. (2006). Experimental disclosure and its moderators: A meta-analysis. *Psychological Bulletin*, 132(6), 823–865. doi:10.1037/0033-2909.132.6.823
- Gortner, E. M., Rude, S. S., & Pennebaker, J. W. (2006). Benefits of expressive writing in lowering rumination and depressive symptoms. *Behavior Therapy*, 37(3), 292–303. doi:10.1016/j.beth.2006.01.004
- Green, T. (2015). A methodological review of structural equation modelling in higher education research. *Studies in Higher Education*, 1–31. doi:10.1080/03075079.2015.1021670
- Hixon, J. G., & Swann, W. B. (1993). When does introspection bear fruit? Self-reflection, self-insight, and interpersonal choices. *Journal of Personality and Social Psychology*, 64(1), 35–43. doi:10.1037/0022-3514.64.1.35
- Hoehn-Saric, R., Schlund, M. W., & Wong, S. H. Y. (2004). Effects of citalopram on worry and brain activation in patients with generalized anxiety disorder. *Psychiatry Research: Neuroimaging*, 131(1), 11–21. doi:10.1016/j.pscychresns.2004.02.003
- Howe, N., Aquan-Assee, J., Bukowski, W. M., Lehoux, P. M., & Rinaldi, C. M. (2001). Siblings as confidants: Emotional understanding, relationship warmth, and sibling self-disclosure. *Social Development*, 10(4), 439–454. doi:10.1111/1467-9507.00174
- Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods*, 3(4), 424–453. doi:10.1037/1082-989X.3.4.424
- Ivey, A. E. (1986). *Developmental therapy: Theory into practice*. San Francisco, CA: Jossey-Bass.
- Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Lincolnwood, IL: Scientific Software International, Inc.
- Jöreskog, K. G., & Sörbom, D. (2003). *Lisrel (Version 8.54) [Computer software]*. Chicago: Scientific Software.
- Johnson, R. E., Rosen, C. C., & Djurdjevic, E. (2011). Assessing the impact of common method variance on higher order multidimensional constructs. *Journal of Applied Psychology*, 96(4), 744–761. doi:10.1037/a0021504
- Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, K. F. (2002). To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling: A Multidisciplinary Journal*, 9(2), 151–173. doi:10.1207/S15328007SEM0902\_1
- Lyubomirsky, S., & Lepper, H. S. (1999). A measure of subjective happiness: Preliminary reliability and construct validation. *Social Indicators Research*, 46, 137–155.
- Machado, P. P., & Gonçalves, O. F. (1999). Introduction: Narrative in psychotherapy: The emerging metaphor. *Journal of Clinical Psychology*, 55(10), 1175–1177.
- Mardia, K. V. (1970). Measures of multivariate skewness and kurtosis with applications. *Biometrika*, 57, 519–530.
- Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy*, 28(6), 487–495. doi:10.1016/0005-7967(90)90135-6
- Morin, A. (2006). Levels of consciousness and self-awareness: A comparison and integration of various neurocognitive views. *Consciousness and Cognition*, 15(2), 358–371. doi:10.1016/j.concog.2005.09.006

- Musacchio, J. M. (2002). Dissolving the explanatory gap: Neurobiological differences between phenomenal and propositional knowledge. *Brain and Mind*, 3(3), 331–365.
- Neimeyer, R. A. & Mahoney, M. J. (Eds.). (1995). *Constructivism in psychotherapy*. Washington, D.C.: American Psychological Association.
- O'Connor, D. B., Walker, S., Hendrickx, H., Talbot, D., & Schaefer, A. (2013). Stress-related thinking predicts the cortisol awakening response and somatic symptoms in healthy adults. *Psychoneuroendocrinology*, 38, 438–446.
- Owen, I. R. (1991). Using the sixth sense: The place and relevance of language in counseling. *British Journal of Guidance & Counselling*, 19(3), 307–320. doi:10.1080/03069889108260394
- Paivio, A., & Marschark, M. (1991). Integrative processing of concrete and abstract sentences. In A. Paivio (Ed.), *Images in the mind: The evolution of a theory* (pp.134–154). New York, NY: Harvester Wheatsheaf.
- Pennebaker, J. W. (1993). Putting stress into words: Health, linguistics, and therapeutic implications. *Behaviour Research and Therapy*, 31(6), 539–548. [http://dx.doi.org/10.1016/0005-7967\(93\)90105-4](http://dx.doi.org/10.1016/0005-7967(93)90105-4). doi:10.1016/0005-7967(93)90105-4
- Pennebaker, J. W., & Chung, C. K. (2011). Expressive writing and its links to mental and physical health. In H. S. Friedman (Ed.), *Oxford handbook of health psychology* (pp. 417–437). New York, NY: Oxford University Press.
- Pennebaker, J. W., & Graybeal, A. (2001). Patterns of natural language use: Disclosure, personality, and social integration. *Current Directions in Psychological Science*, 10(3), 90–93. doi:10.1111/1467-8721.00123
- Russell, B. (1912). *The problems of philosophy*. New York, NY: Galaxy.
- Segerstrom, S. C., Stanton, A. L., Alden, L. E., & Shortridge, B. E. (2003). A multidimensional structure for repetitive thought: What's on your mind, and how, and how much?. *Journal of Personality and Social Psychology*, 85(5), 909–921. doi:10.1037/0022-3514.85.5.909
- Sibrava, N. J., & Borkovec, T. D. (2006). The cognitive avoidance theory of worry. In G. C. L. Davey, & A. Wells (Eds.), *Worry and its psychological disorders: Theory, assessment, and treatment* (pp. 239–256). West Sussex, UK: John Wiley.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7(4), 422–445. doi:10.1037/1082-989X.7.4.422
- Sloan, D. M., Marx, B. P., Epstein, E. V., & Dobbs, J. L. (2008). Expressive writing buffers against maladaptive rumination. *Emotion*, 8(2), 302–306. doi:10.1037/1528-3542.8.2.302
- Stöber, J. (1998). Worry, problem solving, and suppression of imagery: The role of concreteness. *Behaviour Research and Therapy*, 36(7-8), 751–756.
- Stöber, J., & Borkovec, T. D. (2002). Reduced concreteness of worry in a generalized anxiety disorder: Findings from a therapy study. *Cognitive Therapy and Research*, 26(1), 89–96.
- Stöber, J., Tepperwien, S., & Staak, M. (2000). Worry leads to reduced concreteness of problem elaborations: Evidence for the avoidance theory of worry. *Anxiety, Stress, and Coping*, 13(3), 217–227. doi:10.1080/10615800008549263
- Şahin, N. H., & Durak, A. (1994). Kısa Semptom Envanteri: Türk gençleri için uyarlanması (Brief Symptom Inventory: Adaptation for the Turkish Youth). *Türk Psikoloji Dergisi*, 9(31), 44–56.
- Şimşek, Ö. F. (2010). Language and the inner: Development of the Beliefs about Functions of Language (BAFL) Scale. *European Psychologist*, 15(1), 68–79. doi:10.1027/1016-9040/a000005
- Şimşek, Ö. F., & Kuzucu, Y. (2012). The gap that makes us desperate: Paths from language to mental health. *International Journal of Psychology*, 47(6), 467–477. doi:10.1080/00207594.2011.645479
- Şimşek, Ö. F. (2013). The relationship between language use and depression: Illuminating the importance of self-reflection, self-rumination, and the need for absolute truth. *The Journal of General Psychology*, 140(1), 29–44. doi:10.1080/00221309.2012.713407
- Şimşek, Ö. F., Ceylandağ, A. E., & Akcan, G. (2013). The need for absolute truth and self-rumination as basic suppressors in the relationship between private self-consciousness and mental health. *Journal of General Psychology*, 140(4), 294–310.

- Şimşek, Ö. F., & Çerçi, M. (2013). Relationship of the gap between experience and language with mental health in adolescence: The importance of emotion regulation. *The Journal of Psychology, 147*(3), 293–309. doi:[10.1080/00223980.2012.691914](https://doi.org/10.1080/00223980.2012.691914)
- Tucker, D. M., & Newman, J. P. (1981). Verbal versus imaginal cognitive strategies in the inhibition of emotional arousal. *Cognitive Therapy and Research, 5*(2), 197–202. doi:[10.1007/BF01172527](https://doi.org/10.1007/BF01172527)
- Watkins, E. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin, 134*(2), 163–206. doi:[10.1037/0033-2909.134.2.163](https://doi.org/10.1037/0033-2909.134.2.163)
- Watkins, E., & Teasdale, J. D. (2004). Adaptive and maladaptive self-focus in depression. *Journal of Affective Disorders, 82*(1), 1–8. doi:[10.1016/j.jad.2003.10.006](https://doi.org/10.1016/j.jad.2003.10.006)
- Zuellig, A. R., & Borkovec, T. D. (1996, November). Predominance of thoughts and images during trauma recall and worry. Poster presented at the meeting of the Association for Advancement of Behavior Therapy, New York, NY.