Affective and Cognitive Correlates of the Frequency of Using the Verb "to be": An Empirical Test of E-Prime Theory

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Abstract

The current study aimed to be an empirical test of E-Prime theory regarding its alleged positive effects of eliminating the verb "to be" from speech. Therefore, we investigated the intensity and the direction of the association between the frequency of using the verb "to be" and various psychological outcomes, namely general rational and irrational beliefs, negative functional and dysfunctional emotions, the functionality of inferences, and general psychological distress. 197 participants completed measures of investigated variables. Multiple Pearson product-moment correlations were used to test our hypothesis within a cross-sectional design. The frequency of using the verb "to be" was significantly negatively associated with levels of general rational beliefs, $r = -.211$, $p = .021$, and also with levels of preference beliefs, $r = -.251$, $p = .003$. This study provides first evidence in favor of E-Prime's assumption that a less frequent use of the verb "to be" can lead to a less rigid and non-judgmental style of thinking. The elimination of the verb "to be" from speech may prevent dogmatic or rigid thinking, thus stimulating flexibility, and in turn determine the increase of rational beliefs levels, especially the levels of preference beliefs. Possible clinical and scientific implications are discussed.

Keywords E-Prime · Rational emotive behavior therapy (REBT) · Irrational beliefs · Rational beliefs · Functional/dysfunctional emotions

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Introduction

Even though language it is a ubiquitous process, its effects on psychological outcomes, especially on thoughts and emotions, are still debated. Hence, the present study aimed to provide valuable data to provide some clarification in this area of research, by investigating how some specific aspects of the language impact on several cognitive, affective, and behavioral variables. Even there many studies have focused on the relationships between psychological features and several morphologic, semantic, syntax, or pragmatic characteristics, most of them targeted executive functions, the processes of language acquisition/production, and decision-making aspects (e.g., Daneman and Merikle 1996; Masgoret and Gardner 2003; Milligan et al. 2007). Another major line of research overlapping linguistic and psychology is the one investigating the effects that different languages have on thoughts (see Boroditsky 2011; Zlatev and Blomberg 2015). However, in spite of this large body of research, the literature connecting particular aspects of language, like using specific words or parts of speech, with thoughts and/or emotions is rather scant. There is, for example, a meta-analysis (Edwards and Holtzman 2017) that showed that there is a significant association between using first person pronouns and levels of depression.

Therefore, taking into account the poor previous exploration of this research area, we proposed to examine the basic assumptions of E-Prime theory (Bourland 1965; Kellogg and Bourland 1990), which advocates for eliminating all the form of the verb to be from speech, arguing that this will have an important positive psychological effect.

E-Prime theory was developed building on General Semantics' principles (Korzybski 1933), especially on the first principle, "the map is not the territory". E-Prime represents a prescriptive version of Standard English which eliminates all form of the verb "to be". Bourland (1965) was claiming that using the verb "to be" have several semantic negative consequences, like unjustified abstractions, over-generalizations, and logical errors (Bourland 2004). Moreover, some papers from the linguistic field proposed the idea that these semantic and structural problems may lead to negative psychological consequences (Bourland 2004; Kellogg and Bourland 1990). Therefore, the main goal of E-Prime is to increase the congruence between verbal maps of human experience and the real territory of experience (Kellogg and Bourland 1990).

The E-Prime theory states that there are two functions of the verb "to be" which mainly cause negative effects, namely: (a) identity function (e.g., "Kevin is a worker"; Bourland 2004) and (b) predication function (e.g., "That man is stupid"; Bourland 2004). Kellogg and Bourland (1990) claim that when the verb "to be" has the function of location, existence or auxiliary function does not cause negative semantic and/or psychological effects. However, they argue for the elimination of all form of the verb "to be" from speech for practical reasons, assuming that people are strongly conditioned to use this word, and just trying to reduce its frequency would not be efficient (Kellogg and Bourland 1990).

Moreover, Kellogg and Bourland (1990) claim that using E-Prime instead of E-Standard has many advantages, improving several psycho-social variables. The alleged advantages are decreasing the number of stressful situations, reducing the frequency and/or intensity of inter-personal conflicts, improving communication skills and creativity, and also meliorating problem-solving skills. However, the most important presumed effect of E-Prime at the psychological level seems to be that eliminates the possibility of making global evaluations (Kellogg and Bourland 1990).

Menefee (1991) published a critical analysis of E-Prime, emphasizing the idea that the principles and the theory behind E-Prime are not evidence-based (Menefee 1991). Moreover, the presumed benefits of using E-Prime, claimed by its initiators, such as improvements at psychological, behavioral and social levels, have not been tested in any rigorous scientific studies (Menefee 1991).

R-Prime (i.e., Romanian-Prime) is an equivalent form of E-Prime, but it refers to Romanian. The concept was first introduced by David (2013). According to David (2013), classic Romanian, called R-Standard (i.e., Romanian-Standard) has the same structural problems as Standard English regarding the use of the verb "to be", especially when it has predication or identity function.

Rational emotive behavior therapy (REBT; Ellis 1962) is part of the cognitive behavioral therapies family. The core idea of REBT is that feelings are a direct cause of how people evaluate life events. According to REBT, a person can evaluate an event irrational or rational, which in turn will determine affective responses depending on the belief (David and Cramer 2009). REBT defines irrational beliefs as cognitions that do not have logical, pragmatic, and/or empirical support, while rational beliefs represent those cognitions that have logical, pragmatic, and/or empirical support (David and Cramer 2009). There are more and more studies showing that irrational beliefs are a strong predictor or even cause dysfunctional emotions, and/or maladaptive behaviors (David 2015; Vîslă et al. 2016). On the other hand, REBT states that rational beliefs are associated with functional emotions, but this assumption was less tested in empirical studies (see Oltean and David 2018). However, the latest studies (Hyland et al. 2014; Oltean et al. 2017) and one meta-analysis (Oltean and David 2018) revealed a medium negative association between rational beliefs and distress. Central model of the REBT theory, the ABC model (DiGiuseppe et al. 2014; Ellis 1994; Walen et al. 1992), emphasizes also the indirect role of inferences in generating emotions. Even their effect is indirect, through evaluative beliefs, it is assumed that the functionality of inferences impacts on functionality of one's emotions and/or behaviors (Bond and Dryden 2000).

Regarding the distinction between dysfunctional and functional emotions, REBT makes a distinction between the two types of emotion based not only on quantitative criteria, but also on qualitative criteria (David et al. 2005). Also, REBT theory states that when a person feels a negative dysfunctional emotion (e.g., depression), he/she will also experience the corresponding functional negative emotion (e.g., sadness) (David et al. 2005). On the other hand, one can have negative functional emotion, without feeling a negative dysfunctional emotion too.

Albert Ellis, founder of REBT, stressed the important role of General Semantics' theory in the development of REBT and ABC cognitive model (Ellis 2007). Ellis (2007) showed the common vision behind the two approaches, both of them promoting a rational and realistic way of thinking about self, others, and about the world. Moreover, both General Semantics and REBT claim that a rational thinking style leads to mental health, while unrealistic, absolutist, and/or dichotomous thinking leads to cognitive and emotional disturbances (Ellis 2007). Another important aspect linking the two paradigms is that the demandingness, seen as the main etiopathogenetic factor in REBT, implies almost always the use of the verb "to be" with an identity function (Ellis 2007).

Overview of the Study

Therefore, the current study aimed to investigate the intensity and the direction of the association between the frequency of using the verb "to be" and various psychological outcomes, namely general rational and irrational beliefs, negative functional and dysfunctional emotions, the functionality of inferences, and general psychological distress. We expected a negative significant relationship between the frequency of using the verb "to be" and the levels of rational beliefs, negative functional emotions, and functionality of inferences. On the other hand, we expected a positive significant association between the frequency of using the verb "to be" and the levels of irrational beliefs, negative dysfunctional emotions, and psychological distress.

As secondary analyses, we investigated the relationships among the psychological outcomes measured: general rational and irrational beliefs, negative functional and dysfunctional emotions, the functionality of inferences, psychological distress. Moreover, we explored the relationship between the frequency of using the verb "to be" and each of the rational and irrational beliefs processes, namely demandingness (DEM), catastrophizing (CAT), low frustration tolerance (LFT), global evaluations (GE), preferences (PRE), realistic evaluation of badness (REB), high frustration tolerance (HFT), and unconditional acceptance (UA).

Method

Design and Participants

The present study implied a cross-sectional design, all variables being measured at the same time. The participants for this study were recruited from the general population using social networks advertising (e.g., Facebook) and email invitations sent to various discussion groups. The convenience sample included 197 participants. 155 of the participants were females (78.7%), while 42 were males

(21.3%). The number of participants who were students was 108, representing 54.8% of the sample. The age range was 18–50 years, while the mean age was $M = 24.55$ years ($SD = 7.008$).

Procedure

Persons who signed-up for the study after the recruitment phase were given a web-link where they completed and signed the informed consent. After completing the informed consent, participants completed online the questionnaires described below in the "Measure" section. All ethical and confidentiality criteria have been respected and communicated to the participants. Hence, the participants were informed that all their personal data is confidential, that they are free to withdraw from the study at any time, and there are not any obligations to participate. Participants who were Psychology students were rewarded with course credits. Individuals under the legal age of 18 years were not allowed to register for this study. Ethical approval was obtained from the ethical review board at the institution to which the authors belong.

Measures

The *Attitudes and Belief Scale 2-Abbreviated Version* (ABS-2-AV: Hyland et al. 2014) is a 24-item self-report measure of general rational and irrational beliefs, derived from the original 72 item Attitudes and Belief Scale 2 (DiGiuseppe et al. 1988). The ABS-2-AV was designed to measure the four irrational belief processes (DEM, CAT, LFT, and GE) and the four rational belief processes (PRE, REB, HFT, and UA). Three items are used to measure ach rational and irrational belief process. Items are scored along a five-point Likert-scale from 1 ("Strongly disagree") to 5 ("Strongly agree"). For the present analysis, we calculated total scores on each of the individual rational and irrational belief processes, accordingly to the REBT theory. High scores indicate high levels of general irrational, respectively rational beliefs. Previous psychometric assessments of the ABS-2-AV indicated that the questionnaire displays satisfactory psychometric attributes (Hyland et al. 2014). In the present study, Cronbach alpha levels for each irrational and rational belief processes proved satisfactory internal consistency both for the two primary measure, namely irrational beliefs (Cronbach's $\alpha = .860$) and rational beliefs (Cronbach's $\alpha = .843$), and also for each subscale measuring the eight belief types (DEM = .792, CAT = .669, LFT = .772, GE = .808, PRE = .861, REB = .631, HFT = .623, and UA = .774).

The *Profile of Affective Distress* (PDA; Opris and Macavei 2007) is 39-item self-report questionnaire developed to measure negative functional and dysfunctional emotions, as well as positive emotions, consistent with REBT theory. Items are rated on a five-point Likert-scale from 1 ("Not at all") to 5 ("Very much"). There are several subscales measuring distinct types of emotions, namely: negative dysfunctional emotions, negative functional emotions, positive emotions, negative emotions from the "concern/anxiety" and "sadness/depression", total distress and global distress levels. For the

present study, we calculated and used the scores for negative dysfunctional emotions, negative functional emotions, positive emotions, and the total distress score. The validation studies have shown good factorial validity and internal reliability of the PDA scale (e.g., Cronbach's $\alpha = 0.94$, Opris and Macavei 2007). Internal consistency indexes for the current study were satisfactory: negative dysfunctional emotions—Cronbach's $\alpha = .933$, negative functional emotions—Cronbach's $\alpha = .918$, positive emotions—Cronbach's $\alpha = .947$, and distress—Cronbach's $\alpha = .960$.

The functionality of inferences was measured using a scale which is an adaptation after the one used by Bond et al. (1999). The scale consists of 14 items rated on a 9-point Likert-scale 1 ("Strongly agree") to 5 ("Strongly disagree"), seven of items representing functional inferences, while the other seven representing dysfunctional ones. The total score was obtained by summing the scores from the items representing functional inferences with the reversed scores from the dysfunctional inferences items. Therefore, a high score indicates low functionality of one's inferences. The internal consistency for this scale in our sample was Cronbach's $\alpha = .876$.

In order to measure the frequency of using the verb "to be" we developed a new task. The participants were asked to present in short paragraph (e.g., maximum 300 words) the experience they had with their last exam or job interview. We counted every use of the verb "to be" in all its forms, and then we calculated the exact indicator of the frequency of using the verb "to be" as the ratio between the number of uses and the total number of words used.

Data Analysis

First, we computed and then inspected the descriptive statistics of all the variables included in the study. Taking into account the quasi-normal nature of the distribution of the variables, we chose to use parametric analyses of our data. Therefore, in order to test our hypotheses, we ran multiple Pearson product-moment correlation to assess the intensity and the direction of the relationships among our variables. For effect size analyses, we used the r coefficient with the following thresholds: small effect size—$r = .10$; medium effect size—$r = .30$; large effect size—$r = .50$ (Cohen 1988).

Due to the nature of the study, the problem of multiple comparisons may have been arisen. Hence, Holm-Bonferroni corrections (Holm 1979) were used to decrease as much as possible the false discovery rate. This procedure it that is less conservative than familywise error rate procedures (Benjamini and Hochberg 1995), avoiding the increase of probability of Type II errors, while providing adequate Type I error's probability control. Therefore, false discovery rate correction in general, and the Holm-Bonferoni procedure specifically provides greater power than classical methods (Haynes 2013). We applied the Holm-Bonferoni correction for each class of hypotheses separately.

Main analyses were performed using *IBM SPSS Statistics 20* software, while for Holm-Bonferoni we used the *Holm-Bonferroni Sequential Correction: An EXCEL Calculator—Ver. 1.2* (Gaetano 2013).

Results

Descriptive Statistics

Means and standard deviations for the variables used in the study are presented in Table 1.

Primary Analyses

The results of the Pearson product-moment correlations between the frequency of using the verb "to be" and the others investigate variables are the following: general irrational beliefs, $r = .104$, $p = .879$; general rational beliefs, $r = -.211$, $p = .021$; negative functional emotions, $r = .027$, $p = 1.000$; negative dysfunctional emotions, $r = .009$, $p = 1.000$; positive emotions, $r = -.002$, $p = 1.000$; the functionality of inferences, $r = -.053$, $p = 1.000$; psychological distress, $r = .016$, $p = 1.000$.

The frequency of using the verb "to be" was significantly negatively associated with levels of general rational beliefs, $r = -.211$, $p = .021$.

Table 1 Means and standard deviations of variables investigated within the study

Measure	M	SD	N
The verb 'to be'	4.45	3.25	197
Irrational beliefs	31.63	8.43	197
Rational beliefs	49.17	7.04	197
Negative dysfunctional emotions	24.96	10.20	197
Negative functional emotions	29.85	9.32	197
Positive emotions	40.44	10.74	197
Distress	92.38	22.81	197
Functionality of inferences	54.24	16.70	197
DEM	10.94	2.72	197
CAT	7.15	2.82	197
LFT	8.66	3.01	197
GE	4.87	2.43	197
PRE	11.88	2.72	197
REB	12.38	2.15	197
HFT	11.87	2.30	197
UA	13.02	2.17	197

M mean, *SD* standard deviation, *N* number of participants, *DEM* demandingness; *CAT* catastrophizing, *LFT* low frustration tolerance, *GE* global evaluations, *PRE* preferences, *REB* realistic evaluation of badness, *HFT* high frustration tolerance, *UA* unconditional acceptance

Secondary Analyses

The results of the Pearson product-moment correlations between the frequency of using the verb "to be" and each type of irrational and rational beliefs are the following: demandingness, $r=.065$, $p=1.000$; catastrophizing, $r=.096$, $p=.720$; low frustration tolerance, $r=.122$, $p=.444$; global evaluations, $r=.025$, $p=1.000$; preferences, $r=-.251$, $p=.003$; realistic evaluation of badness, $r=-.058$, $p=1.000$; high frustration tolerance, $r=-.169$, $p=.125$; and unconditional acceptance, $r=-.132$, $p=.386$.

The frequency of using the verb "to be" was significantly negatively associated with levels of preference beliefs, $r=-.251$, $p=.003$.

Additionally, Table 2 presents the correlation matrix for the following measured variables: general rational and irrational beliefs, negative functional and dysfunctional emotions, positive emotions, the functionality of inferences, and psychological distress.

Discussion and Conclusions

Current study sought to investigate the intensity and the direction of the association between the frequency of using the verb "to be" and several psychological outcomes. Results highlighted a negative significant small to medium association between the frequency of using the verb "to be" and rational beliefs, as we expected. Moreover, the frequency of using the verb "to be" was also significantly negatively related with the primary rational beliefs type (primary appraisal mechanism), namely preference beliefs. On the other hand, contrary to our predictions, frequency of using the verb "to be" was not significant associated with irrational beliefs and neither with any irrational beliefs type. Furthermore, the results did not show significant relationships with any affective outcome, such as distress, negative functional/dysfunctional emotions, or positive emotions. Same results pattern were observed also when speaking

Table 2 The correlation matrix for the following measured variables: general rational and irrational beliefs, negative functional and dysfunctional emotions, positive emotions, psychological distress and the functionality of inferences

Measure	1	2	3	4	5	6	7
1. Rational beliefs	–						
2. Irrational beliefs	−.590**	–					
3. Negative functional emotions	−.132	.245**	–				
4. Negative dysfunctional emotions	−.218**	.323**	.881**	–			
5. Positive emotions	.070	−.070	−.098	−.122	–		
6. Distress	−.184**	.277**	.849**	.865**	−.565**	–	
7. Functionality of inferences	−.118	.189**	.252**	.349**	.061	.230**	–

**Correlation is significant at the 0.01 level

about the association between the frequency of using the verb "to be" and functionality of inferences.

Regarding secondary analyses, which aimed to take a look at the relationships among the investigated psychological variables, the results were in line with REBT theory predictions. Therefore, irrational beliefs were significantly positively associated with both functional and dysfunctional negative emotions and distress, while being negatively associated with rational beliefs and functionality of inferences. Also, rational beliefs were negatively related with negative dysfunctional emotions and with distress. Another significant negative association was between positive emotions and distress. Least, functionality of inferences was negatively associated with negative functional and dysfunctional emotions, as well as with distress.

The most important result emphasized by the current study is revealing a significant association between frequency of using the verb "to be" and rational beliefs levels. E-Prime advocates presumed that using the verb "to be" less often will decrease the number of unjustified generalization, leading in turn to a less rigid and non-judgmental style of thinking (Bourland 2004). Our data confirms this relationship, showing that infrequent use of "to be" is related with high levels of rational beliefs which reflect a flexible thinking pattern. Regarding the causality of this association, future studies should test if the direction of the relationship is the one proposed by E-Prime theory or vice versa.

Speaking about rational beliefs types, frequency of using the verb "to be" was significantly negatively associated with PRE beliefs. The shared variance of the two variables can be explained by the fact that eliminating the verb "to be" from speech may prevent dogmatic or rigid thinking, thus stimulating flexibility and through that increasing PRE beliefs levels. Also, the fact that PRE beliefs represent the primary appraisal mechanism may also contribute to the aforementioned relationship.

A surprising result was the lack of correlation between frequency of using the verb "to be" and GE and/or UA beliefs. Taking into account their nature, GE beliefs implies almost always the use of "to be". Also, GE beliefs represent generalizations about different life aspects, usually unjustified. Moreover, our research team showed in a previous experimental study (Oltean and David 2015) that using E-Prime may prevent increasing in GE beliefs compared with E-Standard when using a Velten-like depression induction procedure (Velten 1968). Therefore, taking all these arguments into account, we expected a significant positive association between using "to be" and GE beliefs, alongside with a reverse association in the case of UA beliefs.

Other results that did not confirm our hypotheses were the ones showing no significant associations between frequency of using the verb "to be" and any emotional outcomes. E-Prime assumptions stated that elimination of "to be" from speaking would determine fewer conflicts and less stressful situations, thus meaning in psychological terms lower levels of negative emotions and therefore less distress. However, the fact that present results failed to confirm this assumption, despite the existing association with cognitive variables such general rational beliefs, may be due to the lack of an activating event. According to REBT theory, activating events prime various specific evaluating beliefs which in turn generate different emotions (David 2015). So, it is possible that the lack of an activating event may have prevented the activation of specific evaluative beliefs and therefore restrained the highlight of the

association with affective variables. Future studies should investigate the nature of the relationships targeted by this study by using a relevant activating event.

The present study is limited mainly by its cross-sectional nature. Also, the fact that we only used self-report measures for the psychological outcomes could also limit the generalization of the results. Moreover, future studies should develop and validate more accurate and psychometric adequate measurement of the frequency of using the verb "to be". Another limit of the study may be the lack of an activating event. In order to better determine the associations among the investigated variables, future studies should use relevant, ecological activating events, and should use longitudinal or experimental designs. Another interesting direction it would be to investigate if the frequency of using the verb "to be" relates differently with various psychological markers when comparing different functions of the verb, such as identity or predication functions.

In conclusion, the present study aimed to scientifically test basic predictions of E-Prime theory, using an REBT framework. Results showed for the first time that a low frequency of using "to be" is associated with positive psychological outcomes, such high levels of rational beliefs, and especially with preference beliefs. These results could open a very interesting line of research. If future studies will confirm experimentally these relationships, valuable implications may arise, particularly for the clinical psychology field. Clinical psychology could benefit from these findings by incorporating some E-Prime strategies in clinical protocols, in order to enhance the development of a more helpful and adaptive way of thinking, with possible indirect effects on different symptomatology.

Author Contributions First and second authors designed the study. First author collected data and conducted the statistical analyses. First author wrote the first draft of the manuscript. Second author revised critically the manuscript, contributed to interpretation of data and all authors contributed to and have approved the final manuscript.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest with respect to this publication.

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