**E-PRIME/R-PRIME AND EMOTION REGULATION IN THE CONTEXT OF THE BINARY MODEL OF DISTRESS: AN EXPERIMENTAL INVESTIGATION BASED ON THE GENERAL SEMANTICS FRAMEWORK**

*Daniel DAVID*

Babeș-Bolyai University, Cluj-Napoca, Romania

**Abstract**

E-Prime refers to a linguistic tool developed from the General Semantics framework in order to increase the clarity of thoughts and communication. Compared to E-Standard (i.e., standard and/or classic English), E-Prime argues that the verb “to be”– in the forms of “is” of identity and “is” of predicition – has structural problems, confusing the “map” (e.g., mental representations) and “territory” (i.e., physical and/or psychological environment). Therefore, compared to E-Standard (i.e., E-Classic), E-Prime eliminates all the forms of the verb “to be”. R-Prime incorporates the same philosophy, but it refers to Romanian (R), rather than English (E). In this study we investigated the role of R-Prime versus R-Standard (i.e., R-Classic) in inducing anger, in the context of the binary model of distress: functional negative (i.e., annoyance) versus dysfunctional negative (anger) feelings. R-Prime condition displayed a higher level of annoyance at post-test as compared to the R-Standard condition. The level of anger increased (from baseline to post-test) similarly in both R-Prime and R-Standard conditions. Thus, R-Prime induced (from baseline to post-test) both functional (annoyance) and dysfunctional negative feelings (anger), while R-Standard induced (from baseline to post-test) only dysfunctional negative feelings (anger). In the end, we discuss implications for theory, practice, and future developments.

**Keywords:** rational and irrational beliefs, rational emotive behavior therapy, E-Prime/R-Prime, anger and annoyance, emotion regulation

**Generals semantics and E-Prime; Fundamentals**

General Semantics refers to a program initiated by Alfred Korzybski. The book *Science and Sanity: An Introduction to Non-Aristotelian Systems and General Semantics* (Korzybski, 1933) presented the foundations of the program.

* Correspondence concerning this article should be addressed to:
  E-mail: daniel.david@ubbcluj.ro; The author wrote this article in E-Prime.
Alfred Korzybski introduced General Semantics as a branch of natural sciences and/or as applied analytical philosophy aiming to improve the ways people interact with their environment and with one another, especially through training in the critical use of human mind symbols (e.g., words, concepts). Indeed, Korzybski often mentioned influential philosophers as his original sources, like the (neo)positivistic philosophers of the Vienna Circle, analytic philosopher Ludwig Wittgenstein, and the pragmatist Charles Pierce.

A key foundational idea of General Semantics refers to the fact that the “Map is not the Territory”. This means that our symbols (e.g., words) create a “map” (e.g., mental representations) of our “territory” (e.g., external and private environment) and then impact our psychological responses (e.g., feelings, behaviors). However, sometimes the “map” of a “territory” does not reflect correctly and/or precisely the “territory” and thus, it can generate psychological problems when we face and navigate in the “territory”. This idea looks very similar to Albert Ellis’s ABC model (1962), which argues that our psychological outcomes (C: feelings, behaviors, other cognitions) do not stem from the activating events (A), but from how we process them (B; beliefs). Indeed, Albert Ellis recognized the influence of General Semantics when he formulated his rational-emotive and cognitive-behavioral therapy (REBT/CBT; Ellis, 1962).

General Semantics has generated many academic and lay publications, controversial outcomes, and debates. For example, Trainor (1930) presented controversial results showing that by using the exercises described in Chapter 29 of “Science and Sanity”, the level of intelligence increased. The field attracted the attention and support of famous scientists (e.g., the Nobel Prize winner physicist P.W. Bridgman) and impacted (more or less) several major fields and authors (e.g., the development of algorithmic probability – Solomonoff, 1997; the psychotherapy field – Ellis, 1962; psycholinguistic theory through “the Sapir-Whorf-Korzybski hypothesis” – see Smith, 1966). Chase (1966) introduced General Semantics in his famous book “The Tyranny of the Words” and semanticist Hayakawa (1978) popularized General Semantics in the academic field. However, few experimental studies existed and thus the field moved quickly into philosophical debates and/or untestable claims. The claims of the field in the absence of empirical support made Martin Gardner say that General Semantics looks like pseudoscience (Gardner, 1957).

Today the field seems an active one, although not mainstream, and more and more evidence-based oriented. It tries not to make claims beyond the data anymore and to develop by critical thinking and scientific debates. The Institute for General Semantics (see here http://www.generalsemantics.org/) nicely summarized most of the studies and the state of the art of General Semantics.

One of the rigorous and high-impact outcomes of the General Semantics field relates to E-Prime (i.e., English-Prime). E-Prime refers to a prescriptive version of the standard/classic English (i.e., E-Standard or E-Classic) proposed by Bourland (1965). The main idea of E-Prime refers to the fact that in E-Standard
the verb “to be” – in the forms of “is” of identity and “is” of predication – has structural problems, confusing the “map” and “territory”. Bourland sees the "identity" and "predication" functions as specifically problematic, but advocates eliminating all forms (e.g., class membership, auxiliary, location, existence) for the sake of simplicity.

**EXAMPLE**

**E-Standard**
- “Is” of identity: “The electron is a wave.” (Wilson, 1989).
  - It suggests that the situation: “The electron is a particle” challenges the situation that “The electron is a wave.” (see Wilson, 1989).
- “Is” of predication: “He is a bad person.”
  - It involves the logical fallacy of overgeneralization (generalized inference).

**E-Prime**
- “The electron behaves as a wave.”
  - This formulation avoids the identity between the “map” (i.e., “the wave”) and “territory” (i.e., “the electron”). Thus, in different experimental conditions, the electron behaves as a particle.
- “He behaves badly.”
  - This formulation provides us with a nuanced description focused on a particular behavior, implying the unconditional acceptance of the person (not of the behavior).

Its proponents advocate using E-Prime as a device to clarify thinking and strengthen writing (see Kellogg, 1978). As General Semantics, E-prime too generated several hot debates in the field. Several important authors started to write their scientific contribution in E-Prime, for greater clarity. For example, in psychology, Albert Ellis re-wrote some of his books in E-Prime (see the Appendix). Additionally, although less prominent, E-Prime influenced non-scientific fields (e.g., science fiction, historical novels, poetry, and theater; see the work of Robert Anton Wilson). Indeed, a cultural debate about E-Prime started in the field. In culture, the clarity (i.e., the similarity between the “map” and the “territory”) does not represent the main aim. Culture defines its main standards in relationship to esthetic values, rather than values of truth. However, many artists argue that E-Prime could generate both clarity and esthetic values. Bourland summarized the data and debates about E-Prime in several anthologies (e.g., Bourland & Johnston, 1991; 1997; Johnston, Bourland, & Klein, 1994).

I myself think that E-Prime should not force itself as the only legitimate language, as compared to E-Standard. Indeed, the field should not formulate the problem in terms of E-Prime or E-Standard. The problem should contain the issue: when to use E-Prime and/or E-Standard? This way we move into an “E-
Choice” flexible language paradigm (see Menefee, 1991) that seems pretty consistent with the basic principles of General Semantics (sic!). For example, in this article I argue, and then test this idea, that the use of E-Prime might fit better than E-Standard in the field of psychotherapy, more precisely as part of the cognitive restructuring techniques.

**Anger and annoyance: Fundamentals**

Based on the ABC model of rational-emotive and cognitive-behavior theory (REBT/CBT), anger refers to an emotion arising when we process a negative activating event irrationally (David, 2003).

**EXAMPLE**

Activating event (A)
- A life event that has motivational relevance and incongruence: “My boss does not respect me.”

Irrational Beliefs (B)
- Primary appraisal
  - Rigid/absolutistic/inflexible thinking - Demandigness (DEM): “He must respect me and I cannot conceive otherwise.”
- Secondary appraisal
  - Frustration intolerance (FI): “I cannot stand when I am not treated fairly, as I should be.”
  - Global evaluation (GE)/Other-downing (OD): “My boss “is” a bad person.”

Consequences (C)
- Emotion: Anger oriented toward the boss; if global evaluation appears in the form of self-downing (SD: “I am stupid”) or life-downing (LD: “Life is unfair”), rather than other-downing (OD), anger focuses on ourselves or life/situation respectively.

According to REBT/CBT, a functional negative feeling will arise if we process a negative activating event rationally.

**EXAMPLE**

Activating event (A)
- A life event that has motivational relevance and incongruence: “My boss does not respect me.”

Rational Beliefs (B)
- Primary appraisal
  - Preference/acceptance (PRE) that involves formulation of our desires/goals in terms of flexible preference, motivational intensity,
and acceptance: “I would very much like him to respect, me and I do my best in this regard, but I can accept that sometimes the things do not happen the way I want.”

- Secondary appraisal
  - Frustration tolerance (FT) that involves high frustration tolerance, recognition of the difficulty, and hope for the future: “I can stand it when my boss does not treat me the way I would like, even if I do not like it; I do my best to look for positive outcomes otherwise.”
  - Unconditional acceptance (UA) that involves unconditional-other acceptance, motivation for change, and nuanced and contextualized evaluations (e.g., specific behaviors): “I can accept my boss as a person, although he has behaved badly, and I will do my best to make him change his behavior.”

Consequences (C)
- Emotion: Annoyance (healthy anger) oriented toward the boss.

While annoyance has functional consequences (e.g., motivates us to look for solutions), anger has dysfunctional consequences (e.g., creates more problems at work). According to the binary model of distress (see David et al., 2005), if one feels anger (i.e., dysfunctional negative feeling), her/she will also feel annoyance; however, one can feel annoyance (i.e., functional negative feeling) and no anger. Therefore, anger does not simply mean more annoyance. Anger and annoyance seem qualitatively different and both can vary from low to high levels (see David et al., 2005).

In REBT/CBT a key therapeutic process involves the cognitive restructuring of irrational beliefs into their correspondent rational beliefs. Obviously, one can also work directly on the A (e.g., by using communication and problems solving techniques) and/or on the C (e.g., by using various coping and self-control strategies), but these represent examples of feeling better (e.g., symptomatic treatments), rather than getting better and staying better (Ellis, 2001). A focus on A or C, instead of B, seems appropriate in crisis situations, rather than in a natural therapeutic process, where cognitive restructuring represents the key etiopathogenetically-oriented therapeutic strategy.

As one can see in the above examples, global evaluation in the form of self-, other-, and life-dwelling involves “is” of identity and/or prediction. Therefore, one could argue that if we change this appraisal mechanism, we will not experience anger. Thus, E-Prime appears as an appealing and a potential tool for cognitive restructuring, particularly focused on changing global evaluation and promoting unconditional self-, other-, and life-acceptance.

Overview of this study
Velten (1968) devised procedures for mood induction (e.g., depression, elation). Engebretson, Sirota, Niauara, Edwards, and Brown (1999) used this procedure and extended it for anger induction. The procedure asks participants to read several anger-inducing phrases (i.e., propositions). These propositions come formulated in E-Standard and/or in E-Prime. In this study we investigated the effect of these anger-inducing phrases formulated in R-Standard (i.e., R-Classic) versus R-Prime, in the context of the binary model of distress. More precisely, we used R-Prime (Romanian-Prime). R-Prime reflects the same principles as E-Prime, and R-Standard has the same “structural problems” – as concerning Generals Semantics – as E-Standard. David (2010) first formulated and introduced R-Prime in an article written in R-Prime.

We did not specifically aim to test and/or investigate the binary model of distress, but to use it as a context for exploring the role of R-Prime and R-Standard in emotional regulation. Based on the above analysis, we advanced the following specific hypotheses:

1. We expect a higher level of anger at post-test in the R-Standard group compared to the R-Prime group, due the fact that global evaluation (involving “is” of identity and/or prediction) impacts anger as a key secondary appraisal mechanism.

2. We expect an increased level of annoyance at post-test in the R-Prime group compared to the R-Standard group due to the fact that R-Prime eliminates global evaluation (that involves “is” of identity and/or prediction) and provides nuanced evaluations and unconditional acceptance, as a key secondary appraisal mechanism.

Aposteriori/Posthoc analyses will also explore the changes from baseline to post-test in the case of annoyances and anger.

Method

Participants

The sample consisted of 64 participants, 56 females and 8 males (mean age = 22.96; standard deviation = 3.54). The author randomly distributed the participants into two groups: (1) the R-Standard group and (2) the R-Prime group.

Power calculation showed appropriateness of the sample to detect a medium effect size (Cohen’s d = .50), for an alpha power of .80 at p < .05. Indeed, a d = .50 suggests that about 69% of participants in the control group would score below the average participant in the experimental group; such an effect could have an ecological relevance. In a pilot testing (Ples & David, 2012) the impact (from baseline to post-test) of R-Standard on anger surpassed the impact of R-Prime on anger by 50% (Cohen’s ds: -.83, respectively -.46).

Design
We used a two by two experimental design. Time represents the first variable, with two modalities: Baseline and Post-Test. Engebretson et al.’s procedure (1999) for anger induction represents the second variable, with two modalities: R-Standard and R-Prime.

**Measures**

*Anger and Annoyance.* We measured both anger and annoyance by using single numerical scales. First we asked the participants to choose between three conditions: (1) anger; (2) annoyance; and (3) anger and annoyance, describing their emotional state. Then within the chosen condition, participants evaluated (on a scale from 0 to 100) their level of anger, annoyance, or both anger and annoyance. If participants chose the anger or annoyance condition, we considered the score of the other condition as 0. We used this procedure to force our participants to choose the best term describing their feelings. Often, participants use various emotional terms carelessly (see David et al., 2005), based on linguistic habits, rather than reflecting important differences related to their experienced feelings. For example, many people could report feeling “depressed” (rather than “sad”) in minor negative situations, but when we confront them with a choice between “depressed” and “sad” they would choose “sad”. Similarly, for serious negative situations, people reformulate “sad” as “depressed”, when educated and given time to decide for the best term describing their feelings.

*R-Standard and R-Prime.* We used Engebretson et al.’s procedure (1999) for anger induction, in the form of the R-Standard for one group and R-Prime for the other group. The author (DD) and two Romanian supervisors in rational-emotive & cognitive-behavioral therapy (REBT/CBT) made the translation (R-Standard and R-Prime) and they agreed 100% upon their final versions (the author can make the phrases available, upon request). Engebretson et al.’s anger induction procedure (1999) uses 50 anger-inducing phrases. 24 phrases (48%) contained the verb “to be” and therefore, we reformulated into R-Prime only these phrases (i.e., specific phrases); the other phrases remained the same (i.e., common phrases) in both experimental procedures. It should be noted that of 24 phrases (i.e., specific phrases) not all contained “is” of identity and/or of predication (some of them use the verb “to be” as an auxiliary verb).

**Procedure**

We randomly distributed participants in two groups: R-Standard and R-Prime. First we measured the levels of anger and annoyance at baseline. Then, we used the Engebretson et al.’s procedure (1999) for anger induction, in the form of the R-Standard, for one group, and R-Prime, for the other group. Finally, we measured both anger and annoyance again, at post-test.

**Results**

*General semantics, R-Prime, and emotion regulation*
Descriptive analyses. Table 1 presents the descriptive analyses.

### Table 1. Descriptive analyses

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>Post-Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-Prime - Anger</td>
<td>1.25 (7.07)</td>
<td>12.18 (22.85)</td>
</tr>
<tr>
<td>R-Standard - Anger</td>
<td>3.9 (12.61)</td>
<td>13.43 (23.77)</td>
</tr>
<tr>
<td>R-Prime - Annoyance</td>
<td>16.37 (18.32)</td>
<td>27.96 (23.20)</td>
</tr>
<tr>
<td>R-Standard - Annoyance</td>
<td>15.81 (21.07)</td>
<td>16.78 (15.14)</td>
</tr>
</tbody>
</table>

Legend: Means and (Standard Deviations)

Inferential analyses. We found no differences between the experimental conditions (R-Standard versus R-Prime) at baseline, for neither anger nor annoyance (all ps > 0.05).

**ANGER: Apriori analyses – Between Group Analyses.** We obtained no statistically significant differences in anger levels at post-tests, when we compared the R-Standard and the R-Prime conditions [F(1, 62) = 0.04, p = 0.83].

**ANGER: Aposteriori/Posthoc analyses – Within group analyses.** The level of anger from baseline to post-test increased in both the R-Standard condition [t (31) = 2.15, p = 0.03] and in the R-Prime condition [t (31) = 2.92, p = 0.006].

**ANNOYANCE: Apriori analyses – Between group analyses.** We obtained a higher level of annoyance at post-test in the R-Prime condition compared to the R-Standard condition [F(1, 62) = 4.29, p = 0.04]. As we obtained a medium Cohen’s effects size (d = 0.57), it means that about 73% of the participants in the R-Standard group score below the average participant in the R-Prime group on annoyance at post-test.

**ANNOYANCE: Aposteriori/Posthoc analyses – With group analyses.** The level of annoyance increased from baseline to post-test in the R-Prime condition [t (31) = 2.68, p = 0.01], but not in the R-Standard condition [t (31) = 0.31, p = 0.75].

### Discussion and conclusions

Our data did not support our first hypothesis. Indeed, we obtained no statistically significant difference in anger levels at post-tests, when comparing the R-Standard and the R-Prime conditions. Posthoc analyses showed that anger increased significantly from baseline to post-tests in both groups. However, our data supported the second hypothesis. Indeed, we obtained a higher level of annoyance at post-test in the R-Prime condition compared to the R-Standard condition. Posthoc analyses showed that annoyance increased from baseline to post-test only in case of the R-Prime condition.

Thus, our results appear as mixed. Based on them we can say that R-Prime seems to induce (from baseline to post-test) both functional (annoyance)
and dysfunctional negative feelings (anger), while R-Standard seems to induce (from baseline to post-test) dysfunctional negative feelings (anger). We found similar increases in anger levels (from baseline to post-test) in both R-Prime and R-Standard condition.

One would expect – based on the binary model of distress – that an increase in anger in the R-Standard condition (from baseline to post-test) would also imply an increase in annoyance. While we found a very small trend in this direction, the increase did not reach statistical significance. This might have happened not because of power limitations (in fact the study has good statistical power), but because anger dominated subjective feelings due to the experimental condition (e.g., the use of the standard Engebretson et al. procedure for anger induction – with both specific and common phrases), and thus, the annoyance accompanying the feeling of anger did not emerge subjectively and in the evaluation instruments as strong as anger did. On the contrary, in the R-Prime condition, anger dominated the subjective feelings due to the experimental condition (e.g., common phrases), but annoyance also emerged strongly (e.g., due to the specific phrases). Future studies should clarify these issues.

Indeed, the interpretation of our results should take into account the above mentioned context: Engebretson et al.’s anger induction procedure (1999) uses 50 anger-inducing phrases. However, only 24 phrases (48%) contained the verb “to be” (i.e., specific phrases) and therefore, we reformulated into R-Prime only these phrases; the other phrases remained the same (i.e., common phrases) in both experimental procedures. Moreover, of these 24 phrases (i.e., specific phrases) not all contained “is” of identity and/or predication (some of them, for example, use the verb “to be” as an auxiliary verb). Therefore, the fact that we had many common phrases between the experimental conditions, masked the effect of R-Prime in reducing anger compared to the R-Standard condition. Moreover, this could explain why both R-Prime and R-Standard increased anger in a similar way (and thus one of our hypotheses seems not supported by data).

We need future research to better understand the mechanisms of the effects found here (e.g., does R-Prime generate its effects on anger and annoyance by reducing global evaluation?) and to check for their stability and generalizability (e.g., across various cultures and from laboratory to ecological conditions).

Our procedure – changing R-Standard into R-Prime – did not exactly mirror a classical cognitive restructuring process (e.g., targeting DEM, FI, and GE, and change them into PRE, FT, and UA). Therefore, future research should formulate the core beliefs involved in anger in R-Standard versus R-Prime. Obviously, the primary candidate refers to global evaluation (GE) (a type of irrational belief that clearly involves “is” of identity and/or predication). A GE in the form of other-downing formulated in R-Classic (“My wife “is” not listening to me; therefore she “is” bad.”) can appear in R-Prime (“My wife does not follow my advise; therefore she has her own choices.”), thus promoting unconditional
other acceptance. But, we could also study (by using R-Standard versus R-Prime paradigm) the other key irrational beliefs involved in anger, in two ways. First, we can formulate each irrational belief (i.e., DEM, FI) in (1) R-Prime (e.g., DEM: “She must behave flexibly, and I cannot accept otherwise.” and FI: “I cannot stand when she does not behave as she should.”) or (2) R-Standard (e.g., DEM: “She must “be” flexible, and I cannot accept otherwise.” and FI: “I cannot stand it when she “is” not the way she should “be”.”). Second, we can formulate the rational alternative (i.e., PRE, FT) in (1) R-Prime (e.g., PRE: “I prefer she behaves flexibly, but I can accept if this does not happen and she behaves stubbornly.” and FT: “I can stand it when she does not behave appropriately.”) or (2) R-Standard (e.g., PRE: “I would like her “to be” flexible, but I can accept if she does not behave the way I want.” and FT: “I can stand it when she “is” not compliant.”). The results of such a design would give us extremely important information because, indeed, R-Prime and rational beliefs do not represent exactly the same thing. Therefore, we can start several new research areas. Do rational beliefs, formulated in R-Prime, help us more (in terms of healthy psychological consequences) than rational beliefs formulated in R-Standard? Do irrational beliefs formulated in R-Standard generate stronger psychopathology than irrational beliefs formulated in R-Prime? Which dimensions help us more in generating healthy psychological consequences and avoiding psychopathology: (1) rational versus irrational beliefs or (2) R-Standard versus R-Prime? These questions open important and innovative lines of research.

The limitations of the study mainly relate to the use of the Engebretson et al. anger induction procedure (1999) that did not allow “pure” R-Prime versus R-Standard sets of mood induction phrases (a large segment of both sets represented common phrases). Therefore, in order to better control the effect of R-Prime and to understand its internal validity, we need “pure” R-Standard versus R-Prime experimental conditions that should avoid common phrases.

Overall, our results showed that R-Prime looks like a promising line of research with important theoretical and practical impact in the psychological field.

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General semantics, R-Prime, and emotion regulation

11