



# Intuition: The BYU Undergraduate Journal of Psychology

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Volume 3 | Issue 1

Article 4

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2007

## Ego Depletion: A contributing factor of hopelessness depression

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### Recommended Citation

(2007) "Ego Depletion: A contributing factor of hopelessness depression," *Intuition: The BYU Undergraduate Journal of Psychology*. Vol. 3 : Iss. 1 , Article 4.

Available at: <https://scholarsarchive.byu.edu/intuition/vol3/iss1/4>

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et al.: Ego Depletion  
**Ego Depletion: A contributing  
factor of hopelessness depression**

Ego depletion is mental exhaustion from regulation of conflicting internal desires. We hypothesized that this exhaustion would cause a pessimistic outlook on future-event thinking. Eighty-one university students were given a simple reading task designed to deplete the egos of half the subjects (experimental group) and have no effect on the other half (control group). Following the task they were given the Future Events Scale (FES) to assess how positive or negative they viewed their future. Those who were ego-depleted scored lower on the FES ( $p < .044$ ) than those who weren't. This suggests that ego depletion is part of the causal chain of hopelessness depression, because those with a lower score on the FES have a more hopeless attitude.

**T**here are a number of factors that contribute to a person becoming hopeless. Intermingled in the contributory causes of having a negative outlook on life and attributing life stressors to stable, global, and internal causes, is the possibility of another contributory cause. This contributory cause is a state called ego depletion which induces a mental weariness where the amount of energy the self has to use for further acts of controlled regulation and volition has been reduced (Abramson, L. M., Metalsky, G. I., & Alloy, L. B., 1989; Schmeichel, B. J., Baumeister, R. F., Vohs, K. D., 2003).

The theoretical foundation, upon which ego depletion is built, is in Sigmund Freud's personality theory. The ego part of ego depletion is the "self" part of the personality used for many different tasks, including regulating thoughts, emotions, impulses, sustaining physical stamina, and persisting in the face of frustration or failure (Baumeister, R. F., Bratslavsky, E., & Muraven, M. 1998; Schmeichel, et al., 2003). One part of the personality that needs to be regulated is called the id. The id can be thought of as the pleasure seeking, instinctually driven part of the personality. Many human impulses to act come from the id's pleasure seeking behavior, which wants to achieve this as quickly and immediately as possible through the reduction of discomfort, pain, or tension. The id will satisfy these desires without any consideration about what is right or wrong or beneficial for the person. An example of this would be making the choice "Do I eat this doughnut, or do I follow my diet and eat plain oatmeal?" It is the job of the ego to act as the regulator of the id in order to protect the self from harm. According to Freud, the major parts of the personality (of which id, and ego are a part) all operate from an energy source. These acts of controlled regula-

tion by the ego draw on this limited strength or energy. As the ego tries to regulate/mediate one impulse, it will have less ability to regulate subsequent impulses. This will cause a temporary reduction in the self's capacity or willingness to engage in controlled self-regulation (Baumeister et al., 1998; Baumeister, 2002; Moller, A. C., Deci, E. L., & Ryan, R. M., 2006), creating a state known as ego depletion.

Ego depletion is often induced by a test involving resistance of an id impulse (e.g. wanting to break testing rules for convenience sake), followed by a cognitive test (e.g. a frustrating puzzle) to measure whether ego depletion has occurred. Those who are in an ego depleted state will give up sooner, for example, on the frustrating puzzle, than the control group who are not in an ego depleted state (Baumeister et al., 1998, 2001; Polivy J., 1998). It has been found that even five minutes of resisting an id impulse in a laboratory setting was enough to reduce by half how long people made themselves keep trying to solve unsolvable puzzles (Baumeister et al., 1998). From these findings it is clear that an ego depleted state is (at least) a state of mental weariness where the amount of energy the self has to use for further acts of controlled regulation and volition has been reduced (Schmeichel et. al, 2003). Ego depletion individuals show symptoms of retarded initiation of volition, lack of energy, apathy, psychomotor retardation, and difficulty in concentration (Abramson, 1989).

Ego depletion shares some of the symptoms of hopeless depression. Hopelessness depression is a subtype of depression, and has the symptoms of retarded initiation of volition, sad affect, suicide, lack of energy, apathy, psychomotor retardation, sleep disturbance, dif-

Wegener, J. R., Ludlow, C. E., Olsen, A. J., Tortosa, M., Wintch, P. H. (2007). *Ego Depletion: A contributing factor of hopelessness and depression. Intuition: BYU Undergraduate Journal of Psychology*, 3, 12-17.

difficulty in concentration, and mood-exacerbation negative cognitions (Abramson et al., 1989). Ego depleted individuals with symptoms of mental weariness and lack of volitional will (Baumeister et al., 1989) mirror the hopelessness depression symptoms of retarded initiation of volition, lack of energy, apathy, psychomotor retardation, and difficulty in concentration.

Hopelessness depression is different from regular depression in that a hopeless state is a sufficient contributory cause to the symptoms of hopelessness depression (Abramson et al., 1989). Hopelessness can be defined in a dichotomous way, as an individual giving dreaded events the status of inevitably happening while desired future events will inevitably not happen, and then treating those events as reality. It is the feeling of inevitability that makes the individual stop putting forth effort (Andersen, 1990; Andersen, Spielman, and Bargh, 1992; Andersen, and Limpert, 2001; Strunk, Lopez, and DeRubeis, 2006; Reich, D. A., & Weary, G., 1998) which is a state of hopelessness. It is this apathy and lack of volitional will in hopelessness that we believe is strongly correlated to those same symptoms in ego depletion and will then tie ego depletion to hopelessness depression through the causal link of hopelessness.

Because of the similarities in the symptoms of ego depletion and hopelessness depression we will examine the possible relationship that has been hinted at by many researchers. For example, Wichman, A. L., Reich, D. A., & Weary, G. (2006) felt that negative perceptions could be maintained by fatigue and intrusive thoughts, while Baumeister et al. (1998) felt that pathological passivity (e.g., hopelessness depression) might have some element of ego depletion. We hypothesized that non-depressed individuals who are ego depleted through the attention control editing exercise, would generate less positive future thinking much like a person in the hopeless stage of hopelessness depression (as measured by the Future Events Scale).

## Method

### Participants

Data were collected from 81 undergraduate students (36 males, 45 females) in individual and group sessions. They ranged in age from 18 to 45 with an average age

of 21.26. Most of the participants came from psychology classes and received extra credit or regular class credit for their participation. Others were undergraduate students who were randomly recruited on campus or at their homes, and participated of their own will, without incentive. Consent was received from the Institutional Review Board at Brigham Young University.

### Materials and Instruments

To conduct the experiment participants were given packets that contained the following: an informed consent form, instructions for an ego depletion task, the ego depletion task itself (Baumeister et al., 1998), the Future Events Scale questionnaire (Anderson S. M., 1990; Wichman et al., 2006), and three demographics questions, in that specific order. The consent form was signed by all participants and was received by the experimenters.

The task was to read a random text (specifically, half a page of an article on racial profiling out of a psychology journal) and to cross out instances of the letter e while following either the control group instructions or the experimental group instructions. The experimenters did not alter the text in any way for either group.

The control group packets contained instructions to simply cross out all instances of the letter e in the text, with no regulation. This task is quickly and easily learned and requires little conscious effort (Baumeister et al., 1998). The experimental group packets contained instructions to cross out e's with these two stipulations: to not cross out any e's that were adjacent to any other vowel, and to not cross out any e's that were one letter removed from any other vowel. For example, participants would have been unable to cross out the e's in shoe and megaphone. This task requires significantly more conscious effort and was found through manipulation checks done by Baumeister et al. (1998) to be a valid means of ego depletion.

Finally, the packet contained the Future Events Scale. This is a questionnaire consisting of 26 statements, in a category scaling format, concerning events that could possibly occur in any participants future (e.g. To be stuck in a boring and unfulfilling job, to be very lonely when I am old, to live the lifestyle I have always dreamed of). Participants rate the events on an 11 point scale (-5 is extremely unlikely, +5 is extremely likely) according to how likely they feel it is that the events will occur to them during their lives. There are

13 positive and 13 negative events. The scoring is done by subtracting the summed ratings of the likelihood of the positive events from the summed ratings of the likelihood of the negative events and taking that number's absolute value. The higher the number, the more pessimistic is the view of the participant. The score is used to assess levels of optimism and pessimism and has implications for clinical practice (Wichman et al., 2006).

The demographics questions concerned participant's age, gender, and whether subjects had served LDS missions or not. The data related to these questions showed that they had no significant effect on the dependent variable.

## Procedures

Most participants were informed of the study by in-class announcements and through the BYU Research Participation System on the web. Some were approached on campus by the experimenters and asked if they would be willing to participate. All those recruited on campus were asked to come to specific classrooms during a two hour time period. They were told that they could come anytime during the two hours because the experiment would be running continuously. Some participants arrived in groups as large as thirty and others came alone. When large groups came the experimenters welcomed them in and introduced the experiment to the entire group at once. When individuals came in they were welcomed, seated, and given an introduction to the experiment quietly in order to avoid disturbing any participants already present.

In order to ensure random assignment and an equal number of participants in the control and experimental groups, the packets were ordered alternately (one control, one experimental, etc.) and distributed to participants in that order. The experimenters then deceived the participants by telling them that the study was designed to measure language abilities by assessing how well they could comprehend and follow instructions. They were told that inside their paper packets was an instruction comprehension task requiring them to read a random text and cross out particular instances of the letter e according to the instructions given them. They were further told that the experimenters knew how many e's were to be crossed out and that they would be rated on

their comprehension according to how many e's they crossed out correctly.

After the ego depletion task was completed, the participants simply turned the page in their packet and filled out the FES questionnaire. When they finished, they brought their packets back to the experimenters. They were then given either a verbal or written debriefing, thanked, and then excused.

This procedure was followed for all participants recruited on campus. The experimenters recruited roughly one fourth of participants by going to participants homes and inviting them to participate. In these cases the same procedure was followed, with the only difference being that participants were working through the packets in the comfort of their homes rather than a classroom. These participants cooperated of their own will and were not given any incentive.

## Results

### Manipulation check.

Baumeister et al., (1998) performed the manipulation check of scoring participants on a 25-point scale assigned to the two condition groups on the cross out the e's task. Baumeister found there to be a significant difference in the reported concentration needed in the difficult-rules condition compared to the easy-rules condition. Further evidence was supplied by monitoring the participants as they worked on the cross off the e's task. It was visually evident that the experimental group often showed signs of frustration, where the control was not evident

### Approaching hopelessness depression

The general linear model (GLM) univariate analysis of variance with the experimental condition (ego-depletion vs. control condition) as independent variable and

Table 1

Gender	Mean	N	SD
Male	36.83	36	25.959
Female	23.02	45	28.537
Total	29.16	81	28.114

*Gender as the Independent Variable*

the future event scale as the dependent variable showed a significant difference between the experimental conditions,  $<p 0.044$  (See table 1).

#### Additional analysis

Because we did not control for gender differences in prediction of future events a GLM with univariate analysis of variance with gender as an additional factor was conducted female and male participants did not differ in their scored level on the FES,  $F=0.005$ ,  $p=.941$  (see table 2)

## Discussion

Our study supports a relationship between an ego depleted state and a state of hopelessness which is part of the symptoms of hopelessness depression. An individual in an ego depleted state was more likely to score lower on the Future Events Scale, and therefore, was less hopeful about their future. The symptoms of apathy, lack of energy, and lack of volitional motivation found in the individual with in an ego depleted state are the same as some of the symptoms of hopelessness and hopelessness depression.

In the study that outlined the original hopelessness theory (Abramson et al., 1989), a diagram (see figure 1) was used to diagram the relationship of the causal factors in an etiological chain. We have used a similar (albeit a more simplified diagram; figure 2), but have added ego depletion in its possible relationship to the contributing factors of hopelessness depression, with the relationship to the sufficient cause of hopelessness as our hypothesized finding. We will discuss in the implications section, some of the possible relationships of ego depletion in the causal chain to hopelessness depression.

#### Alternate explanations and limitations

A confound concerning the experimental sample should be addressed. It is that we did not assess the participant's mental states before they engaged in the experiment. This has two implications for the study.

The first is that due to the fact that participants were all students, they may have had a greater degree of immunity to ego depletion than the average person. According to past research on ego depletion, the mind may

Table 2

Group	M	SD	df	F	P
Experimental	22.34	27.780	82	4.201	0.044
Control	34.79	27.869			

*Groups as the Independent Variable*

act like a muscle which develops strength through consistent and effective exercise over long periods of time. This strength is stored in a type of mental energy reservoir (Baumeister et al., 1998; Muraven M., Tice, D. M., & Baumeister, R. F., 1998). Students spend a great deal of their time engaging in mental exercise. Therefore, is it possible that their mental energy reservoirs are very large and full of strength. This suggests that our student participants may have had an immunity to ego depletion and the independent variable did not have the expected effect.

The second is that due to the many ego depleting activities typical of student life, participants may have arrived at the experiment already in an ego depleted state. Students are often compelled to regulate their minds during lectures and study sessions. This would result in a natural ego depletion, which the participants in our study would not have been exempt from. Because we did not assess whether they came to the experiment having already been ego depleted before we gave them the ego depletion task, we cannot be totally sure that the resulting scores on the FES questionnaires were due to the ego depletion task.

Another limitation is that there was no manipulation check conducted by our team. However, we took the crossing out the e's task from Baumeister et al. (1998), who ran several manipulation checks that affirmed its validity. We considered this evidence enough that the task would be a sufficient independent variable and that it was useful for our purposes.

#### Implications

Since we feel that ego depletion is part of the causal chain leading to hopelessness depression, learning how to strengthen the ego so that it does not become depleted could lower the chances of developing hopelessness, and consequently, hopelessness depression (Deutsch, Gawronski, & Strack, 2006; Galliot, Baumeister, & Schmeichel, 2006; Polivy, 1998). Baumeister et al.

(2003) also suggested that practicing simple exercises that require volition control (e.g. concentrating on correct posture, getting adequate sleep, and seeking positive experiences) as ways to increase resistance to ego depletion's effects. There are many segments of society that could benefit from learning to strengthen their egos.

Two of the segments are those suffering from addiction, and those suffering from psychotic symptoms, especially delusions. People addicted to substances or practices that are harmful, can be taught to avoid situations that deplete their ego, leaving them more vulnerable to giving in to an addictive behavior. Those suffering from delusions tend to be resisting impulses to act upon voice commands, or are wearied by the constant effort required to concentrate on the world around them over their conflicting inner world. Both groups could be given exercises (such as concentrating on correct posture throughout the day) as a method of strengthening the ego against depletion and strengthening them against developing depression, a problem they are especially susceptible to.

Ego depletion has a foundational role in the formation of hopelessness depression, and is integral because it magnifies the effects of every step in the formation of hopelessness depression. Our simplified modification of the original Abramson (1989) figure (figure 2) shows how we theorize ego-depletion is related to the different stages in the causal chain (other than hopelessness) leading to hopelessness depression, i.e. stressors, and negative cognitive style.

Ego depletion could increase the effects of stressors. Stressors' magnitude would seem to have a greater impact to one who is already been ego-depleted from past situations. They could therefore stabilize, globalize, and internalize the cause or severity of the stressors and could increase the draw-down on ego energy reserves.

An ego depleted state, combined with the effects of stressors, could also possibly serve as a basis for the negative cognitive style. When people view their stressors through the lens of a negative cognitive style, they do so because they are ego depleted; they learn to feel hopeless because their experience has shown their inability to solve their problems repeatedly. Ego depleting events can build upon one another, plunging one deeper and deeper into a depleting well of strength, where the normal forms of having that strength regenerated (Baumeister, 2003) were insufficient because of

the depth of the depletion. Negative cognitive style becomes inevitable because the individual is in a constant state of mental weariness and volitional retardation and is constantly being reinforced to think that they cannot escape, because, they in fact, are not escaping. They are forced to stabilize, globalize, and internalize the problems of life that come their way.

#### Future research possibilities

Future research should focus on what the strength or energy is that, when depleted, gives the symptoms of ego depletion. It would be good to examine further relationships to all of the links in the causal chain leading to hopelessness depression, such as people's reactions to stressors (including a negative cognitive style), the nature of hopelessness, and of course, and the nature of the depression family with ego depletion viewed as a causal factor, or foundation for all of them. In addition to controlling one's posture, an especially helpful area of research could be to discover the most effective means of strengthening the ego.

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