Index of Self-Esteem: Social, Demographic, and Cognitive Nested & Non-Nested Models

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Abstract

Self-esteem is something that each person possesses. It is how we feel about the person we see in the mirror, a positive or negative view toward oneself. Self-esteem is important regardless of age, race, or any other variable because it affects nearly everything, having links to depression, eating disorders, anxiety, happiness, and countless other facets of life. But what affects self-esteem? This study used data from five hundred thirty four traditional and nontraditional undergraduate students at the University of Nebraska at Lincoln. Three nested models were compared against a full model of predictors of self-esteem, including a social model, a demographic model, and a cognitive model, which were then compared against each other. The only significant reduced model was the cognitive model, which performed as well as the full model.
Index of Self-Esteem: Social, Demographic, and Cognitive Nested & Non-Nested Models

Self-esteem is how an individual thinks of oneself, and affects how one lives their life. Research has shown that high self-esteem reduces anxiety and anxiety-related defensive behavior (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004), and even predicts success and well-being in life domains such as relationships, work, and health (Orth & Robins, 2014). On the other hand, research has linked low self-esteem with depression (Shaver & Brennan, 1991), loneliness (Perlman & Peplau, 1982), alienation (Johnson, 1973), social anxiety (Leary, 1983), and even the prevalence of psychiatric disorders (Van Damme, Colins, & Vanderplasschen, 2014).

There is significant research on self-esteem and what it affects, but what affects self-esteem? Is one’s self-esteem influenced by social statistics, the result of external factors? Research has shown that social support has a significant positive relationship with self-esteem (Hoseinzadeh, Azizi, & Tavakoli, 2014). Or is it more predetermined, influenced by demographic variables? Research has shown that self-esteem is linked with age, such that self-esteem follows a quadratic trajectory across the life span, increasing during adolescence, young adulthood, and middle adulthood, reaching a peak at age sixty years, and then declining in old age (Orth, Maes, & Schmitt, 2015). Also gender, with one study showing that females scored significantly lower on self-esteem (McKay, Dempster, & Byrne, 2014). And ethnicity, research stating that African American students score highest, Whites scores slightly higher than Hispanics, and Asian American score lowest (Bachman, O’Malley, Freedman-Doan, Trzesniewski, Donnellan, 2011). Or is self-esteem based on the mind-specifically thoughts, behaviors, and psychological well-being? Research has shown that there is a connection between
self-esteem and cognition, such that self-esteem increases positive automatic thoughts and life satisfaction, and decreases trait anxiety and depression (Arimitsu & Hofmann, 2015).

The purpose of the current study is to investigate the relationship between self-esteem and social, demographic, and cognitive predictors. By understanding what kind of variables have an influence on self-esteem, everyone from mental health care professionals and researchers to teachers and parents will be able to benefit. This research will show what variables affect self-esteem, which will be useful in finding people who are susceptible to low self-esteem. By identifying significant predictors, the onset of various disorders such as depression, anxiety, and eating disorders can be targeted early and hopefully prevented. The treatment of anything related to self-esteem will also be influenced, as more specific treatments can be applied to patients based on the cause of their low self-esteem.

It is hypothesized that reduced models will perform as well as the full model. The full model examined the relationship between Index of Self-Esteem and number of close friends, membership to a fraternity or sorority, romantic relationship status, number of dating relationships in the last year, age, gender, ethnicity, family type raised in, positive affect, levels of detail and perfection, obsessive thoughts and compulsive behaviors, and negative self-thoughts. The first research hypotheses was that a social model including just number of close friends, membership to a fraternity or sorority, romantic relationship status, and number of dating relationships in the last year would perform as well as the full model. The next research hypothesis was that a demographic model including just age, gender, ethnicity, and family type raised in would perform as well as the full model. Also that a cognitive model including positive affect, levels of detail and perfection, obsessive thoughts and compulsive behaviors, and negative self-thoughts would perform as well as the full model.
It is also hypothesized that the reduced social model will be a better predictor of self-esteem than the cognitive model. Also, that the demographic model will be a better predictor of self-esteem than the social model. And finally, that the cognitive model will be a better predictor of self-esteem than the demographic model.

Method

Participants

Five hundred thirty four both traditional and nontraditional undergraduate students at the University of Nebraska at Lincoln participated in the study. Three hundred twelve (58.4%) were female and two hundred twenty two (41.6%) were male. Four hundred thirty eight (82%) were European American, forty two (7.9%) were Other, thirty four (6.4%) were African American, eleven (2.1%) were Hispanic American, five (0.9%) were Asian American, and two (0.4%) were Native American. Participants were friends and associates of students enrolled in an introductory statistics course. They had a mean age of 21.01 years with a range from 17 years old to 34 years old.

Materials

A self-report questionnaire that consisted of demographic questions such as age, gender, and race, and also questions such as number of close friends, romantic relationship status, and family type raised in was completed by all of the participants. A variety of surveys were also included, such as the Affective Balance Scale (ABS), which is a ten item instrument designed to measure psychological well-being, especially mood state. It has subscales of Positive Affect and Negative Affect, higher scores meaning higher positive and negative affect (Bradburn & Noll, 1969). Also the Compulsiveness Inventory (CI), an eleven-item scale designed to measure behaviors that are common in the “normal” population, containing subscales of Indecision and
Double-Checking, Order and Regularity, and Detail and Perfection, with higher scores meaning greater compulsiveness for each subscale (Kagan & Squires, 1985). The Obsessive-Compulsive Scale (OSC) is a twenty-item single scale scored instrument that measures the general tendency toward obsessive thoughts and compulsive behaviors, with higher scores meaning greater compulsiveness (Gibb, Bailey, Best, & Lambirth, 1983). The Automatic Thoughts Questionnaire (ATQ) is a thirty item instrument that measures the frequency of automatic negative statements about the self, containing Personal Adjustment and Desire for Change, Negative Self-Concepts, Low Self-Esteem, and Helplessness subscales, higher scores meaning more negative thoughts.

The Index of Self-Esteem (ISE) is a twenty-five item scale designed to measure the degree, severity, or magnitude of problem with self-esteem, an evaluative component of self-concept. It is a single scale score, with higher scores meaning higher self-esteem.

**Procedure**

The survey was completed in a natural setting by all of the participants. The given data was retrieved and analyzed through SPSS. Table 1 shows the univariate statistics and correlation with self-esteem for each of the variables.

**Results**

Table 2 shows the regression weights for the various models. The full model had an $R^2=0.127, F(12, 494)=6.004, p<0.001$, with positive affect, obsessive thoughts and compulsive behaviors, and negative self-thoughts having significant regression weights, and negative self-thoughts having the largest contribution to the model.

The first reduced model, the social model, consisted of the variables number of close friends, membership to a fraternity or sorority, romantic relationship status, and number of dating relationships in the last year. It had an $R^2=0.010, F(4, 508)=1.257, p=0.286$, with none of the
predictors having a significant contribution to the model. Contrary to the hypothesis, this model
did not perform as well as the full model, \( R^2_{\text{change}}=0.118, F_{\text{change}}(8, 494)=8.333, p<0.001 \).

The demographic model included age, gender, ethnicity, and family type raised in, and
had an \( R^2=0.007, F(4, 523)=0.907, p=0.460 \), and once again none of the predictors had a
significant contribution to the model. Contrary to the hypothesis, this model did not perform as
well as the full model, \( R^2_{\text{change}}=0.119, F_{\text{change}}(8, 494)=8.442, p<0.001 \).

The final model, the cognitive model, included just positive affect, levels of detail and
perfection, obsessive thoughts and compulsive behaviors, and negative self-thoughts. This
reduced model had an \( R^2=0.114, F(4, 523)=16.878, p<0.001 \), with positive affect, obsessive
thoughts and compulsive behaviors, and negative self-thoughts having a significant contribution
to the model, and negative self-thoughts having the largest contribution to the model. As
hypothesized, this model did perform as well as the full model, \( R^2_{\text{change}}=0.013, F_{\text{change}}(8, 494)=0.935, p=0.487 \).

The predictive utility of the reduced models were compared using Steiger’s Z-Test. The
correlation between the social model and the demographic model was \( r=0.057, p=0.196 \). Both of
these models accounted for the same amount of variance of Index of Self-Esteem, \( Z=0.264, p=0.792 \), contrary to the research hypothesis that the demographic model would be a better
predictor of self-esteem than the social model.

The correlation between the social model and the cognitive model was \( r=0.093, p=0.034 \).
The cognitive model accounted for more variance of Self-Esteem than the social model,
\( Z=4.145, p<0.001 \), revealing that the cognitive model is a significantly better predictor of self-
esteem than the social model. These are the opposite results than what was hypothesized, which
was that the social model would be a better predictor of self-esteem than the cognitive model.
The correlation between the demographic model and the cognitive model was $r=0.045$, $p=0.307$. The cognitive model accounted for more variance of Index of Self-Esteem than the demographic model, $Z=4.367$, $p<0.001$. The cognitive model is a significantly better predictor of self-esteem than the demographic model, supporting the research hypothesis.

**Discussion**

The results showed that neither a reduced model of social variables nor a reduced model of demographic variables performed as well as the full model with all twelve predictors. Although that is due to none of the variables in the social model or in the demographic model being significant, thus making the models insignificant. The cognitive reduced model was significant though, and performed as well as the full model, supporting the research hypothesis.

Membership to a fraternity or a sorority did not contribute to the full model or any of the reduced models. And while this is consistent with research results that members of sororities did not have a higher mean of self-esteem than those who were not in sororities (Saville & Johnson, 2007), it is also not consistent with other research which found that differences in self-esteem are present between members of fraternities and non-fraternity members by the end of the first year of college (Brand & Dodd, 1998), and also that membership collective self-esteem was related to personal self-esteem (Sykes, 2006). Further analysis of fraternity or sorority membership is necessary, as the results were conflicting with previous research.

Age was another variable that was not significant for any of the models. Research has shown that self-esteem increases from adolescence to middle adulthood, peaks at about age fifty to sixty years, and then decreases at an accelerating pace into old age; that self-esteem is a relatively stable trait, individuals with high or low self-esteem at one stage of life are likely to have relatively high or low self-esteem decades later; and that high self-esteem prospectively
predicts success and well-being in life domains such as relationships, work, and health (Orth, & Robins, 2014). Age not being significant in this study is most likely due to the age group of participants, with the majority being between the ages of 19 and 22.

Research has found that gender plays a role on self-esteem, such that men have higher self-esteem than women (Sprecher, Brooks, & Avogo, 2013). Contrary to those results, gender was insignificant in these models. This is perhaps due to the limited scope of the population sampled. As people age, self-esteem differences between the genders become more pronounced, so the young mean age of the participants is most likely the reason for the insignificant effect.

Ethnicity and self-esteem has been researched, with findings reporting that African Americans had higher self-esteem than Whites, Hispanics, and Asians, and this study provided evidence that the higher self-esteem of African Americans relative to other races has persisted across the past two decades (Sprecher, Brooks, Avogo, 2013). The insignificance of ethnicity in this study is most certainly due to the lack of variance of ethnicity, with 82% of participants being European American, and only 6.4% of participants being African American.

Positive affect was significant in both the full model ($\beta=0.181, p<0.001$) and the reduced cognitive model ($\beta=0.178, p<0.001$). This is consistent with previous research, which has found that self-esteem is positively correlated with positive affect (Huang & Zhang, 2010). This result was expected, as it makes sense that a positive outlook would be associated with higher self-esteem, or outlook on the self.

Obsessive thoughts and compulsive behaviors were significant in both the full model ($\beta=-0.112, p=0.020$) and the reduced cognitive model ($\beta=-0.099, p=0.033$). There has not been too much previous research on the relationship between obsessive thoughts and compulsive behaviors, so it would be beneficial in further researching this relationship.
Negative self-thoughts were significant in both the full model ($\beta=-0.289, p<0.001$) and the reduced cognitive model ($\beta=-0.221, p<0.001$). Again, there has not been too much previous research on the relationship between negative self-concepts and self-esteem, so further research is necessary.

There were some limitations on this study, mainly concerning the participants. All of the participants were college students at the University of Nebraska at Lincoln, with the majority being between the ages of 19 and 22, and the participants were predominantly European American. A more diverse sampling of participants could provide different results from those found in this study.

Future research should focus more on the variables from the reduced cognitive model, as they were the only variables that were significant in this study. Comparing these models across gender and ethnicity would also be beneficial, as the implications of such research would be extremely useful in the prevention and treatment of anything related to self-esteem.
References


### Table 1

**Descriptive statistics and correlations**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>N</th>
<th>Correlation with Self-Esteem</th>
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<tr>
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<td>120.853</td>
<td>29.499</td>
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<td>Number of Close Friends</td>
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<td>10.438</td>
<td>529</td>
<td>0.087*</td>
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<td>Membership to Fraternity/Sorority^</td>
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<td>0.383</td>
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<tr>
<td>Number of Dating Relationships in Last Year</td>
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<td>0.024</td>
</tr>
<tr>
<td>Age</td>
<td>21.011</td>
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<td>-0.020</td>
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<td>Gender^***</td>
<td>1.584</td>
<td>0.493</td>
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<tr>
<td>Ethnicity^^^^</td>
<td>1.991</td>
<td>0.096</td>
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<td>-0.018</td>
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<tr>
<td>Family Type Raised In^^^^^</td>
<td>1.198</td>
<td>0.399</td>
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<tr>
<td>Positive Affect</td>
<td>3.697</td>
<td>1.221</td>
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<td>0.238***</td>
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<tr>
<td>Levels of Detail &amp; Perfection</td>
<td>0.882</td>
<td>0.872</td>
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<tr>
<td>Obsessive-Compulsive</td>
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<tr>
<td>Negative Self- Thoughts</td>
<td>10.751</td>
<td>4.601</td>
<td>533</td>
<td>-0.286***</td>
</tr>
</tbody>
</table>

^Coded as 0=Independent 1=Greek  
^^Coded as 1=yes 2=no  
^***Coded as 1=male 2=female  
^^^^Coded as 1=white 2=not white  
^^^^^Coded as 1=nuclear 2=not nuclear  
*p<0.05 **p<0.01 ***p<0.001
Table 2
*Results from the various regression models*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Full Model</th>
<th>Social Model</th>
<th>Demographic Model</th>
<th>Cognitive Model</th>
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<tbody>
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<tr>
<td>Number of Dating Relationships in Last Year</td>
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<td>0.000</td>
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<tr>
<td>Age</td>
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<td></td>
</tr>
<tr>
<td>Gender^^^</td>
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<td>0.178****</td>
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<tr>
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<tr>
<td>Obsessive-Compulsive</td>
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<td>-0.099*</td>
<td></td>
</tr>
<tr>
<td>Negative Self-Thoughts</td>
<td>-0.289***</td>
<td></td>
<td>-0.221***</td>
<td></td>
</tr>
</tbody>
</table>

^Coded as 0=Independent 1=Greek
^^Coded as 1=yes 2=no
^^^Coded as 1=male 2=female
^^^^Coded as 1=white 2=not white
^^^^^Coded as 1=nuclear 2=not nuclear
*p<0.05  **p<0.01  ***p<0.001