Relationships between Gender, Education Level, Self-Esteem, and Mental Health Outcomes

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Abstract

Males and females tend to manifest distinct mental health outcomes. Specifically, females report higher levels of psychological distress, whereas males report higher levels of externalizing symptoms. The purpose of this study is to explore how gender, education level, and self-esteem relate to psychological distress and externalizing symptoms. This study used data from a 2015 nationally representative survey, National, Health, Well-being and Perspectives Study, which includes over 1,000 adult’s respondents. We found a significant interaction between gender, education level, and self-esteem level on psychological distress. However interestingly, we did not find an interaction on externalizing symptoms using the same set of independent variables. This research help us better understand the relationship between gender and mental health outcomes.
Relationships between Gender, Education Level, Self-Esteem, and Mental Health Outcomes

Males and females tend to manifest distinct mental health outcomes. Many previous studies had provided evidences to explain the gender differences in mental health. Besides gender, we further explore alternative independent variables like education level and self-esteem in this study to see whether they are related to the different pattern of psychological distress and externalizing symptoms that were often found in both gender.

In previous studies, researchers often found a relationship between gender and both mental health outcomes (psychological distress and externalizing symptoms). Studies showed that females report higher levels of psychological distress, such as depression and anxiety than males, whereas males report higher levels externalizing symptoms, such as alcohol abuse and aggression compared to females (Rosenfield, Lennon, & White, 2005; Rosenfield & Smith, 2010).

For the relationship between self-esteem and mental health outcomes, findings of previous researches showed negative association between self-esteem and psychological distress (Munford, 1994; Orth, Robins, & Roberts, 2008). In the study of Orth, Robins, and Roberts (2008), they found that low self-esteem helps to predict individuals’ depression level. Consistent with Orth and team’s study, Munford’s (1994) found a significant difference between self-esteem and depression, such that participants who scored lower in self-esteem reported higher depression scores. However, both of these studies failed to find a significant difference of this relationship across gender (Munford, 1994; Orth, Robins, & Roberts, 2008). Researchers from both studies explained that depression level varies across males and females, such that males showed lower in depression level than females, while Orth and his team also found that males tend to score higher in self-esteem. However, these researches agreed that the relationship
between self-esteem and depression level (low self-esteem predicts higher depression) is unaffected by gender (Orth, Robins, & Roberts, 2008; Munford, 1994).

Furthermore, Donnellan (2005) and his team found a negative relationship between self-esteem and externalizing symptoms based on the reports from participants’ parents and teachers. Results showed consistency with other previous studies such that low self-esteem individuals were more likely to engage in aggressive behaviors. Supporting Donnellan’s (2005) findings, other researchers also tied low self-esteem to higher risk of externalizing problems such as antisocial behaviors and substance/alcohol abuse (Rosenfield, Lennon, & White, 2005).

Zhang, Chen, & Feng (2015) examined the relationship between education level and psychological distress among older Chinese population and they found a negative relationship in their study. The pattern of high levels of education showed low distress level over time is true for males, urban residents and aged from 65 to 79. However, education level does not showed a significant differences in psychological distress among rural females who have high initial level of distress (Zhang, Chen, & Feng, 2015). Besides that, the results of Brannlund and Hammarstorm’s (2014) study showed consistency with previous research. The results of their study revealed a relationship between education level and psychological distress, such that individuals in Sweden who continue to pursue secondary education showed lower psychological distress compared to those with compulsory school only. This pattern was found in both males and females. However, this relationship weakens as age increases (Brannlund & Hammarstorm, 2014).

According to Huerta and Borgonovi’s (2010) study, there is a relationship between education level and alcohol use, such that higher educational attainment is associated with increased number of daily alcohol consumption and drinking problem. Researchers explained
that “the more educated individuals are, the more likely they are to drink on most days” (Huerta and Borgonovi, 2010, pg. 147). Their results showed that females who have higher education level (degree level) tends to drink more on most days than females with lower education level (secondary or advanced level). Even though higher education level is associated with increased number of daily alcohol individuals consumed, Huerta and Borgonovi (2010) found that educational attainment is not significantly associated with alcohol abuse (drink more than the maximum recommended) for males and females. Besides that, their findings also revealed that female participants with the highest educational qualifications is significantly associated with drinking problems. Females with higher degree level are more likely to experience problems caused by drinking than those without degree qualification (Huerta and Borgonovi, 2010).

Contrary to Huerta and Borgonovi’s study, McCarthy, Aarons, and Brown (2001) found a significant negative association between education and alcohol use among participants who are currently in the alcohol and drug treatment programs. However, participants who are recruited from the community did not showed a significant correlations between education and alcohol use (McCarthy, Aarons, and Brown, 2001).

Furthermore, Baillie (2005) collected participants’ education level in his study to examine whether the pattern of mental health outcomes across gender varies after adding another possible variable. He found a significant interaction between gender and education level in psychological distress. In his research, female participants who did not complete the highest level of secondary schooling showed highest psychological distress compared to both males and females who had completed secondary education (Baillie, 2005). Baillie’s (2005) finding suggested that females with lower education level had higher psychological distress compared to males and females who earned higher education level. However, result from a similar study that
was conducted by Linander, Hammarstrom, and Johansson (2014) is not consistent with the pattern found in Baillie’s (2005) study. In Linander and her team’s (2014) study, she and her team found that low education level was not significantly related to individual’s psychological distress and there was no difference between education level and psychological distress for both males and females. Research that examined the interaction of gender and education level on externalizing symptoms was no found.

Based on results of prior researches that showed a negative association between gender or self-esteem on psychological distress or externalizing symptoms, some researchers focused on studying the interaction between gender and self-esteem. Overall, researchers found significant difference between these variables such that males reported higher self-esteem than females (Bachman, O’Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011; Collison, Banbury, & Lusher, 2016; Sprecher, Brooks, & Avogo, 2013). Contrary to prior researches that were mentioned above, Munford (1994) failed to found a significant differences between gender and self-esteem. Most of these studies further examined the relationship between gender and self-esteem by taking into account of individuals’ race, age, and social class (Bachman, O’Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011, Munford, 1994; Sprecher, Brooks, & Avogo, 2013).

There was no prior research found that studied the interaction of self-esteem and education level on psychological distress and externalizing symptoms. Research that examined 3-way interaction of gender, education level, and self-esteem on both mental health outcomes was also not found.

The purpose of this study is to understand the relationship of gender, education level, self-esteem, and mental health outcomes. Researcher looked at the main effect of gender, self-
esteem, and education level on psychological distress and externalizing symptoms respectively. 2-way interactions of gender and self-esteem, gender and education level, and self-esteem and educations on both mental health measurements were also included in this study. Furthermore, research also analyzed the 3-way interaction of gender, education level, self-esteem on both psychological distress and externalizing symptoms.

**Method**

**Participants and Procedure**

The National, Health, Well-being and Perspectives Study is a nationally representative survey of over 1,000 adults collected in 2015. The sample size is collected by randomly selecting United States postal addresses. The survey collected information on mental health and social relationships as well demographic controls. Participants completed a self-report questionnaire that included demographic questions regarding gender and education attainments.

**Measurements**

*Independent Variables*

Independent variables include gender, education levels, self-esteem levels. Information of gender and education levels are collected from demographic questions that were asked in the questionnaire. Self-esteem was measured on a 5-points agreement scale with statements such as “I am confident in myself”, “I feel that I’m a person of worth, at least on an equal plane with others”, and “I have a lot of good qualities”. Response choices for self-esteem were coded into 1 = *Strongly disagree*, 2 = *Disagree*, 3 = *Neither Agree Nor Disagree*, 4 = *Agree*, 5 = *Strongly Agree*.

*Dependent Variables*
Dependent variables measured in this study are psychological distress (internalizing symptoms) and externalizing symptoms. Psychological distress is a combination of depressive and anxious symptoms experienced in the past 30 days such as “I felt that nothing could cheer me up”, “I felt anxious”, “trouble keeping my mind on things”, and “trouble relaxing”. Response choices were coded into 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always. To capture externalizing symptoms, we combined measurements of alcohol abuse and aggressive behavior. We asked about alcohol abuse experiences in the past 12 months such as “I got into trouble with my family or friends because I had been drinking.” and “I had trouble controlling my drinking”. Responses for alcohol abuse were coded into 1 = Never, 2 = Once, 3 = Twice, 4 = 3-4 Times, 5 = 5 or More Times. For aggression, we asked participants how much does the statements describe them, such as “I lose my temper pretty easily”, and “Often when I’m angry at people I feel more like hurting them than talking to them about why I’m angry”. Responses were coded into 1 = Not At All, 2 = A Little Bit, 3 = Somewhat, 4 = Mostly, 5 = Completely.

Results

Psychological Distress

There is a significant 3-way interaction between gender, education level, and self-esteem level on psychological distress \( F (2,543) = 3.119, \text{MSE} = .261, p = .045, r = .107 \). Further analysis of cell means that compared education levels showed that males who have low self-esteem showed the highest psychological distress score if they only had high school or less education level compared to those who either had bachelor or beyond bachelor’s degree. Low self-esteem males who had bachelor’s degree showed equivalent psychological distress score to those who had beyond bachelor’s degree. There was also no difference in psychological distress for males who have high self-esteem across all education levels. For females who have low self-
esteem, those who earned a bachelor’s degree showed the lowest psychological distress score when compared to either those who only had high school or less education level or those who had beyond bachelor’s degree. However, there was no difference in psychological distress scores between low self-esteem females who had high school or less education level and those who earned a beyond bachelor’s degree. Among high self-esteem females, those who only had high school or less education level showed highest psychological distress compared to either those who earned a bachelor or beyond bachelor’s degree. However, there was no difference in psychological distress between high self-esteem females who earned a bachelor’s degree and those who earned a beyond bachelor’s degree.

Results of cell means comparison between self-esteem levels showed that low self-esteem males who either had high school or less education level or bachelor’s degree showed highest psychological distress compared to high self-esteem males who had the same education level. However, both low and high self-esteem males who had beyond bachelor’s degree showed equivalent psychological distress. Low self-esteem females showed higher psychological distress compared to high self-esteem females across all education levels.

Further analysis that compared the cell means of gender showed that among low self-esteem individuals, females who had high school or less education level or beyond bachelor’s degree showed higher psychological distress than males from the same groups. However, there was no difference in psychological distress between low self-esteem males and females who had a bachelor’s degree. For high self-esteem individuals, only females who had high school or less education level showed higher psychological distress than males of the same group. However, males and females who either had a bachelor or beyond bachelor’s degree showed equivalent psychological distress.
There is no 2-way interaction between self-esteem and education level in psychological distress, \((F(2,543)=2.354, \text{MSE} = .261, p=.096)\). Further analysis of cell means of education levels revealed that low self-esteem individuals with high school or less education levels showed highest psychological distress when compared to individuals who either had bachelor or beyond bachelor’s degree. However, there is no difference in psychological distress low self-esteem individuals who had bachelor’s degree and those who had beyond bachelor’s degree. High self-esteem individuals showed equivalent psychological distress across all education levels. Overall, this 2-way interaction is potentially misleading when compared to the 3-way interaction that has cell means comparison of education. For low self-esteem individuals, the effect is descriptive for males across all education levels but misleading for females in the categories of high school or less vs. beyond bachelor’s degree and bachelor’s degree vs. beyond bachelor’s degree. The effect is misleading for low self-esteem females such that those with high school or less education level have equivalent psychological distress with those who had beyond bachelor’s degree, while psychological distress is higher for those with beyond bachelor’s degree than those with bachelor’s degree only. Among high self-esteem individuals, the effect is descriptive for males across all education levels and misleading for females in the categories of high school or less vs. bachelor’s degree and high school or less vs. beyond bachelor’s degree. The effect is misleading such that those with high school or less education level showed highest psychological distress when compared to either those with bachelor or beyond bachelor’s degree.

There is no 2-way interaction between gender and education level in psychological distress, \((F(2,543)=1.083, \text{MSE} = .261, p=.339)\). Cell means comparison of education levels revealed that males from all different education groups showed equivalent psychological distress. However, females who had high school or less education levels showed the highest
psychological distress when compared to either females with bachelor or beyond bachelor’s degree. There is no difference in psychological distress between females with bachelor’s degree and females with beyond bachelor’s degree. When comparing this 2-way interaction to the 3-way interaction that has cell means comparison of education, this 2-way interaction is potentially misleading in overall. Among males, the effect is descriptive for high self-esteem individuals across all education levels and misleading for low self-esteem individuals in the categories of high school or less vs. bachelor’s degree and high school or less vs. beyond bachelor’s degree. The effect is misleading such that low self-esteem males who had high school or less education level showed highest psychological distress when compared to either bachelor or beyond bachelor’s degree. Among females, this effect is misleading for low self-esteem individuals in the categories of high school vs. beyond bachelor’s degree and bachelor’s degree vs. beyond bachelor’s degree and is descriptive for high self-esteem individuals across all education levels. The effect is misleading such that low self-esteem females with high school or less education level and beyond bachelor’s degree showed no difference in psychological distress whereas those with beyond bachelor’s degree showed greater psychological distress than those with bachelor’s degree.

There is no 2-way interaction between education level and self-esteem in psychological distress, as mentioned above. Cell means comparison of self-esteem revealed that low self-esteem individuals showed higher psychological distress than high self-esteem individuals across all education levels. When comparing this 2-way interaction to the 3-way interaction that involved the cell means of self-esteem, this 2-way interaction is potentially misleading in overall. The effect is descriptive across both high school or less education level and bachelor’s degree categories for males and females, whereas it is misleading for the beyond bachelor’s degree
category. For individuals who had beyond bachelor’s degree, the effect is misleading where both low and high self-esteem males showed no difference in psychological distress.

There is no 2-way interaction between gender and self-esteem in psychological distress, \((F(1,543)=.024, MSe = .261, p=.878)\). Cell means comparison of self-esteem revealed that both males and females who have low self-esteem showed higher psychological distress than high self-esteem individuals. Overall, this 2-way interaction is potentially misleading when compared to the 3-way interaction that has cell means comparison of self-esteem. The effect is descriptive for females across education levels and misleading for males who had beyond bachelor’s degree. The effect is misleading such that among those with beyond bachelor’s degree, low self-esteem males showed no difference in psychological distress when compared to high self-esteem males.

As mentioned above, there is no 2-way interaction between self-esteem and gender in psychological distress. Cell means comparison of gender showed that both low and high self-esteem females had higher psychological distress than males. Overall, this 2-way interaction is misleading when compared to the 3-way interaction that has cell means comparison of gender. The effect is misleading for both low and high self-esteem individuals. The effect is misleading such that low self-esteem males who had bachelor’s degree showed equivalent psychological distress when compared to low self-esteem females who had the same education level. It is also misleading for high self-esteem individuals who had bachelor’s degree and those who beyond bachelor’s degree, such that high self-esteem males from these groups showed no differences in psychological distress compared to females in the same groups.

There is no 2-way interaction between education level and gender in psychological distress, as mentioned above. Cell means comparison of gender revealed that females who had high school or less education levels and females who had beyond bachelor’s degree showed
higher psychological distress compared to males from the same groups. However, there is no difference in psychological distress between males and females who had bachelor’s degree. When comparing this 2-way interaction to the 3-way interaction that involved the cell means of gender, this 2-way interaction is potentially misleading in overall. The effect is descriptive for individuals who had high school or less education levels and individuals who had bachelor’s degree, but it is misleading for individuals who had beyond bachelor’s degree. The effect is misleading such that among those with beyond bachelor’s degree, high self-esteem males and females showed equivalence psychological distress.

There is a main effect of education level on psychological distress ($F(2,543)=7.749, MSe = .261, p<.001$). We found a significant difference in psychological distress between individuals who had high school or less education level when compared to either individuals who had a bachelor’s degree or beyond bachelor’s degree, such that those who had high school or less education level showed highest psychological distress when compared to either of the other two groups. However, individuals with bachelor’s degree and those with beyond bachelor’s degree showed no difference in psychological distress. Overall, this main effect is potentially misleading. When comparing this main effect to the 2-way interaction of self-esteem and education levels (compared cell means of education levels), the main effect is descriptive for low self-esteem individuals across all education levels but misleading for high self-esteem individuals in the categories of high school or less vs. bachelor’s degree and high school or less vs. beyond bachelor’s degree. When comparing this main effect to the 2-way interaction of gender and education levels (compared cell means of education levels), this main effect is descriptive for females across all education levels but misleading for males in the categories of high school or less vs. bachelor’s degree and high school or less vs. beyond bachelor’s degree.
There is a main effect of self-esteem level on psychological distress ($F(1,543)=54.134$, $MSe = .261, p<.001$), such that individuals with low self-esteem experienced greater psychological distress than high self-esteem individuals. Overall, this main effect is descriptive. This main effect is descriptive for both 2-way interactions of education levels by self-esteem and gender by self-esteem (both compared cell means of self-esteem).

There is a main effect of gender on psychological distress ($F(1,543)=23.097$, $MSe = .261, p<.001$), such that females have higher psychological distress than males. Overall, this main effect is potentially misleading. When comparing this main effect to the 2-way interaction of self-esteem and gender (compared cell means of gender), the main effect is descriptive for across low and high self-esteem individuals. When comparing this main effect to the 2-way interaction of education levels and gender (compared cell means of gender), the main effect is only misleading for individuals who had bachelor’s degree.

*Externalizing Symptoms*

There is no significant 3-way interaction between gender, education level, and self-esteem level on externalizing symptoms ($F(2,567) = .525, MSe = .235, p = .592, r = .043$). Cell means comparison of education levels revealed males with low self-esteem and had a bachelor’s degree showed the lowest externalizing symptoms when compared to either those who had high school or less education level or those who had a beyond bachelor’s degree. However, there was no difference in externalizing symptoms between low self-esteem males who had high school or less education level and those with a beyond bachelor’s degree. There was also no difference in externalizing symptoms for males who have high self-esteem across all education levels. Both low and high self-esteem females also showed no difference in externalizing symptoms across all education levels.
Results of cell means comparison between self-esteem levels showed that males who had low self-esteem and males who had high self-esteem showed equivalence externalizing symptoms across all education levels. For females who had either a bachelor or a beyond bachelor’s degree, those with low self-esteem showed greater externalizing symptoms that high self-esteem females. However, there was no difference in externalizing symptoms between both low and high self-esteem females who had high school or less education level.

Further analysis that compared the cell means of gender showed that among low self-esteem individuals, males and females showed equivalent externalizing symptoms across all education levels. Among high self-esteem individuals, males and females who had either high school or less education level or bachelor’s degree also showed no difference in externalizing symptoms. However, only high self-esteem males who had beyond bachelor’s degree showed greater externalizing symptoms than high self-esteem females in the same group.

There is no 2-way interaction between self-esteem and education level in externalizing symptoms, \((F(2,567)=2.415, MSe = .235, p=.090)\). Further analysis of cell means of education levels revealed that low self-esteem individuals who had bachelor’s degree showed the lowest externalizing symptoms when compared to either those with high school or less education levels or those with beyond bachelor’s degree. However, there is no differences in externalizing symptoms for low self-esteem individuals who had high school or less education level and those who had beyond bachelor’s degree. High self-esteem individuals showed equivalent externalizing symptoms across all education levels. Overall, when compared this 2-way interaction to the 3-way interaction that has cell means comparison of education level, it is descriptive. This is because we do not have a significant 3-way interaction of gender, education level, and self-esteem level on externalizing symptoms.
There is no 2-way interaction between gender and education level in externalizing symptoms, \((F(2,567)=1.334, MSe = .235, p=.264)\). Cell means of education revealed that both males and females showed equivalent externalizing symptoms across all education levels. Overall, this 2-way interaction is descriptive when comparing to the 3-way interaction that has cell means comparison of education level because we do not have a significant 3-way interaction.

As mentioned above, there is no 2-way interaction between education level and self-esteem in externalizing symptoms. Cell means of self-esteem revealed that there is no difference in externalizing symptoms between low and high self-esteem individuals, among those who had high school or less and those who had bachelor’s degree. However, low self-esteem individuals who had beyond bachelor’s degree showed higher externalizing symptoms than high self-esteem individuals with the same education level. Overall, this 2-way interaction is descriptive when comparing to the 3-way interaction that has cell means comparison of self-esteem because we do not have a significant 3-way interaction.

There is an interaction between gender and self-esteem in externalizing symptoms, \((F(1,567)=6.612, MSe = .235, p=.010)\), such that low and high self-esteem males showed no difference in externalizing symptoms, whereas low self-esteem female showed greater externalizing symptoms than high self-esteem female, based on the cell means comparison of self-esteem. Overall, this 2-way interaction is descriptive when comparing to the 3-way interaction that has cell means comparison of self-esteem because we do not have a significant 3-way interaction.

As mentioned above, there is an interaction between self-esteem and gender in externalizing symptoms, such that low self-esteem males and females showed no difference in
externalizing symptoms, whereas high self-esteem males showed higher externalizing symptoms than high self-esteem females. Overall, this 2-way interaction is descriptive when comparing to the 3-way interaction that has cell means comparison of gender because we do not have a significant 3-way interaction.

There is no 2-way interaction between education level and gender in externalizing symptoms, as mentioned above. Cell means of gender revealed that males and females who had high school or less education levels and bachelor’s degree showed equivalent externalizing symptoms. However, males who had beyond bachelor’s degree showed higher externalizing symptoms than females who had the same education level. Overall, this 2-way interaction is descriptive when comparing to the 3-way interaction that has cell means comparison of gender because we do not have a significant 3-way interaction.

There is no main effect of education level on externalizing symptoms ($F(2,567)=2.151, MSe = .235, p=.117$). Cell means comparison of education level revealed that individuals who had high school or less education levels showed higher externalizing symptoms than those with bachelor’s degree. However, individuals with beyond bachelor’s degree showed equivalent externalizing symptoms when compared to either individuals with high school or less education level or those with bachelor’s degree. Overall, main effect is descriptive when comparing to the 2-way and 3-way interaction that has the cell means of education level because both of our interactions are non-significant.

There is a main effect of self-esteem level on externalizing symptoms ($F(1,567)=6.462, MSe = .235, p=.011$), such that low self-esteem individuals had higher externalizing symptoms than high self-esteem individuals. Overall, this effect is potentially misleading. Since we do not have a significant 2-way interaction of education level and self-esteem (compared cell means of
self-esteem) and also do not have a significant 3-ways interaction, this main effect is descriptive. When comparing this main effect to the 2-way interaction of gender and self-esteem (compared cell means of self-esteem), the main effect is descriptive for the females but misleading for males.

There is a main effect of gender on externalizing symptoms \((F(1,567)=6.707, MSe = .235, p=.010)\), such that males have higher externalizing symptoms than females. Overall, this main effect is potentially misleading. When comparing this main effect to the 2-way interaction of self-esteem and gender (compared cell means of gender), the main effect is misleading for low self-esteem individuals and descriptive for high self-esteem individuals. Since we do not have a significant 2-way interaction of education level and gender (compared cell means of gender) and also do not have a significant 3-ways interaction, this main effect is descriptive.

There is no main effect of education level on externalizing symptoms \((F(2,567)=2.151, MSe = .235, p=.117)\). We found a significant difference in externalizing symptoms between individuals who had high school or less education level when compared to individuals who had a bachelor’s degree. Those who had high school or less education level showed higher psychological distress than those who had a bachelor’s degree. However, we did not find differences in externalizing symptoms between individuals with high school or less education and beyond bachelor’s degree and also between individuals with bachelor’s degree and those with beyond bachelor’s degree. This effect is descriptive because we do not have an interaction and also did not find a main effect of education level on externalizing symptoms.

There is a main effect of self-esteem level on externalizing symptoms \((F(1,567)=6.462, MSe = .235, p=.011)\), such that individuals with low self-esteem experienced greater externalizing symptoms than high self-esteem individuals. Overall, this effect is descriptive
because we do not have a 3-ways interaction between gender, education level, and self-esteem level on externalizing symptoms.

There is a main effect of gender on externalizing symptoms ($F(1,567)=6.707, MS_e = .235, p=.010$), such that male have higher externalizing symptoms than female. Overall, this effect is descriptive because we do not have a 3-ways interaction between gender, education level, and self-esteem level on externalizing symptoms.

**Discussion**

In this study, we do not found any previous research that studied about 3-way interaction of gender, education level, and self-esteem on both mental health outcomes. Our research showed interesting pattern of 3-way interaction where we found a significant interaction between gender, education level, and self-esteem on psychological distress but not on externalizing symptoms. Based on the results of this study, we saw that individuals’ gender, education level, and self-esteem are related and when these features are put together, they only correlated with participants’ distress level. Further research may be done by looking further into reasons that help to explain the different patterns of association that these same set of variables on the two mental health measurements.

Our finding of non-significant 2-way interaction of gender and education level on psychological distress is consistent with Linander, Hammarstrom, and Johansson’s (2014) study, where they found no difference between education level and psychological distress for both males and females. However, our results are contrary to Baillie’s (2005) findings where he found that females who had lower education level showed highest psychological distress compared to both males and females who had higher education level. Our results might be more accurate if we could gather more detail information about individuals’ educational attainment (whether they
are current students who still earning degree in school or they had already graduated from school and received the degree years ago).

We found a non-significant 2-way interaction of gender and self-esteem on psychological distress matched with prior articles where researchers found that the relationship between self-esteem and depression level (low self-esteem predicts higher depression) does not varies across gender (Orth, Robins, & Roberts, 2008; Munford, 1994). However, it is unclear whether our findings of a significant interaction on externalizing symptoms is consistent with prior research because previous articles that we found did not examine how gender and self-esteem correlated with externalizing symptoms (Bachman, O’Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011; Collison, Banbury, & Lusher, 2016; Munford, 1994; Sprecher, Brooks, & Avogo, 2013). Our result of these 2-way interactions may provide insight to help understand the different association patterns of gender and self-esteem on two different mental health measurement. Further research can be done to provide explanation for why gender and self-esteem level are related with individuals’ psychological distress but not their externalizing behaviors.

Our findings on main effect of gender on psychological distress and externalizing symptoms are consistent with prior research done by Rosenfield and her team (Rosenfield, Lennon, & White, 2005; Rosenfield & Smith, 2010). Supporting previous studies, our results showed that gender is significantly associated with both mental health outcomes. Females often experienced higher depression and anxiety levels than males, while males are at higher risk to engage in externalizing behaviors such as alcohol abuse and aggressive behaviors.

Furthermore, we also found significant relationship between self-esteem levels on both mental health outcomes. Participants with low self-esteem experienced greater psychological
distress and externalizing symptoms compared to high self-esteem participants. These patterns showed consistency with previous studies where researchers found negative association between self-esteem and both mental health outcomes (Donnellan, 2005; Munford, 1994; Orth, Robins, & Roberts, 2008; Rosenfield, Lennon, & White, 2005). Lower self-esteem individuals were often tied to having greater psychological distress and externalizing behaviors compared to high self-esteem individuals.

Besides that, the results of our research that showed a significant main effect of education level on psychological distress is consistent with prior studies (Zhang, Chen, & Feng, 2015; Brannlund & Hammarstorm, 2014). However the pattern of our results only partially matched with these previous studies. Both previous studies found a negative relationship between education level and psychological distress, such that individuals with high levels of education showed low distress level over time (Zhang, Chen, & Feng, 2015; Brannlund & Hammarstorm, 2014). In our study, this pattern is only true when we compared individuals with high school or less education level to those with either bachelor or beyond bachelor’s degree. We did not find a difference in psychological distress level when we compared participants who had bachelor’s degree and those who earned beyond bachelor’s degree, which is contrary to prior researches.

Even though we found a significant difference of education level on psychological distress, participants’ education level did not show significant association with externalizing symptoms. These findings are only partially matched with prior researches. We only found previous researches that focused on the relationship between education level and alcohol use or abuse but not on aggressive behaviors. The pattern that we found in our study is consistent with Huerta and Borgonovi’s (2010) findings, where they found that educational attainment is not significantly associated with alcohol abuse. This pattern also supported McCarthy, Aarons, and
Brown’s (2001) findings where they did not find a relationship between education level and alcohol abuse among participants that they recruited from the general community. However, our results did not support McCarthy, Aarons, and Brown’s (2001) findings where they found that participants who are currently receiving alcohol and drug treatment showed a significant negative association between education and alcohol use.

To further examine the relationship of gender and mental health outcomes, researchers can expand this study by using different possible variables such as socio-economic status, marital status, race, age, and social support that might provide explanations and better understanding to this relationship. Current and further researches might provide significant insight into gender differences in mental health outcomes and the manifestation of mental health problems in general.
References


