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Taylor Pitcher, M.A.

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Approved:

Morrie Mullins, Ph.D.
Morrie Mullins, Ph.D.
Chair, School of Psychology

Jennifer E. Gibson, Ph.D.
Jennifer E. Gibson, Ph.D.
Dissertation Chair

Unrealistic Optimism and Psychological Wellbeing in First Year College Students

Dissertation Committee

Chair	Jennifer E. Gibson, Ph.D. Associate Professor of Psychology
Member	Jennifer E. Phillips Ph.D. Assistant Professor of Psychology
Member	Nicholas Salsman, Ph.D., ABPP Professor of Psychology

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Abstract

Unrealistic optimism is associated with more risky behaviors, less health-promoting behaviors, and greater belief in one's invulnerability (Dillard et al., 2009; Spendelow & Jose, 2010; Weinstein, 1980). Currently, there is limited information regarding college students' assessment of their mental health risk and the mental health implications of unrealistic optimism. The present study sought to expand the literature and explore if college students' group status (i.e., unrealistic optimists, realists, and unrealistic pessimists) as it related to their risk of depression and anxiety at the beginning of the first semester of college (T1) would be associated with psychological well-being and health related behaviors at the end of the first semester of college (T2), while controlling for social desirability. A minimum of 152 participants needed to be retained from T1 to T2; however, only 104 were retained. As a result, primary analyses examined the cross-sectional data from 187 participants at T1 instead. Results indicate that this particular cohort of first year students had high social desirability despite the anonymity of the surveys. Furthermore, this cohort also unexpectedly had more unrealistic pessimists than those in previous unrealistic optimism research studies. Lastly, results indicate that unrealistic optimists had worse mental health outcomes than realists and unrealistic pessimists. Despite limitations, this research filled a number of gaps in the unrealistic optimism literature and has implications for applied research that could examine the benefits of identifying students' optimism status. Furthermore, this study offered interesting insights about optimism group statuses that can inform future experimental studies, as well as popular perception.

Keywords: unrealistic optimism, mental health, first year college students

Unrealistic Optimism and Psychological Wellbeing in First Year College Students

An optimist is someone who generally thinks, expects, and feels positively about future events (Forgeard & Seligman, 2012; Peterson, 2000). When one believes good things will happen, they will generally be more motivated to see these things come to fruition. Thus, optimism can be defined as a "cognitive, affective, and motivational construct" (Forgeard & Seligman, 2012, p.109; Peterson, 2000).

There are many benefits to being optimistic, as research tends to find that optimistic individuals are happier, healthier, and more successful than pessimistic individuals. Studies measuring optimism have found that first year college students who were optimistic adjusted better to college (Aspinwall and Taylor, 1992) and were less stressed and depressed than students who were less optimistic (Ruthig et al., 2009). However, these relationships of optimism with adjustment and psychological health were mediated by coping strategies and perceived academic self-efficacy respectively (Aspinwall and Taylor, 1992; Ruthig et al., 2009). While optimism is linked to better functioning, these studies suggest that optimism alone may not be enough. Instead, optimism may lead to other specific thoughts (i.e., perceived academic self-efficacy) and behaviors (i.e., coping strategies) that result in positive outcomes.

Unrealistic Optimism

While many studies describe the benefits of optimism, optimism outcomes can vary depending on how realistic or unrealistic one's optimism tends to be (Forgeard & Seligman, 2012). Optimism is realistic when there is a good chance that things will indeed go well. Unrealistic optimism, also known as optimism bias, occurs when one believes that things will go well when there is no real indication that they will (Weinstein, 1980). Individuals who are

unrealistically optimistic also believe they are more likely to experience positive events and less likely to experience negative events compared to others (Spendelow & Jose, 2010).

Types of Unrealistic Optimism

Few articles have examined the consequences of unrealistic optimism, most likely due to the difficulty in trying to operationally define and measure unrealistic optimism (Shepperd et al., 2017). Unrealistic optimism can be delineated into two terms: unrealistic comparative optimism and unrealistic absolute optimism (Jefferson et al., 2017; Shepperd et al., 2015). Of particular interest to this study is unrealistic comparative optimism, which occurs when one has an expectation for themselves that is unrealistic and optimistic compared to their estimates for other people (Jefferson et al., 2017; Shepperd et al., 2015). Unrealistic absolute optimism, on the other hand, occurs when one has an expectation that is unrealistic and optimistic compared to an objective standard (e.g., time, grade point average, base rates, etc.).

Not only are there two broad categories, but these categories can be further broken down into individual or group level comparisons (Shepperd et al., 2017): unrealistic absolute optimism at the individual level, unrealistic absolute optimism at the group level, unrealistic comparative optimism at the individual level, and unrealistic comparative optimism at the group level. Of particular interest in this study is unrealistic comparative optimism at the individual level. This occurs when a person compares their risk of an outcome to someone else's risk or the average person's risk (Shepperd et al., 2017). This can be measured by having an individual estimate their risk compared to that of the average individual's risk. Then, the researcher determines the individual's actual risk, which is then compared to the average person's risk. If the person estimated their risk as low, but their actual risk is above average, then the individual is unrealistically optimistic (Shepperd et al., 2017).

Effects of Unrealistic Optimism

Most of the research on unrealistic optimism has focused on perceived risk susceptibility and the behavioral and affective consequences of optimistically perceiving one's risk to be low (Dillard et al., 2009; Spendelow & Jose, 2010; Weinstein, 1980). Studies have found that individuals who are unrealistically optimistic about their own future behaviors tend to have worse behavioral outcomes than their realistic counterparts (Dillard et al., 2009; Weissberg et al., 2003). For example, college students who were unrealistically optimistic about not engaging in risky alcohol behaviors actually tended to engage in them more than their more realistic counterparts (Dillard et al., 2009). Not only is unrealistic optimism associated with more risky behaviors, but it tends to also be associated with fewer health-promoting behaviors (Dillard et al., 2006; Dillard et al., 2009; Weissberg et al., 2003). However, it should also be noted that some studies have found that unrealistic optimism is associated with positive health behaviors and outcomes (Hevey et al., 2014; Taylor et al., 1992).

Factors Affecting Unrealistic Optimism

There are many factors that may affect the presence of unrealistic optimism and whether or not the consequences of unrealistic optimism are negative or positive. One factor that may influence unrealistic optimism and its consequences is if individuals are already coping with a problem (O'Brien & Moorey, 2010; Shepperd et al., 2015). For instance, if one is already coping with an issue (e.g., health problem) then unrealistic optimism may be helpful, as optimism may influence the person to engage in proactive or preventative behaviors, which have a positive effect on future health. However, unrealistic optimism does not always lead to taking precautionary measures, such as in Dillard et al. (2006) when unrealistic optimism about lung

cancer risk was associated with fewer health promoting behaviors in comparison to non-optimists.

A factor that can influence unrealistic optimism and may explain these contradictory outcomes is controllability. If one believes that they may be able to influence or control an outcome, then they may have more reason to be unrealistically optimistic of their chances of not having a negative outcome happen to them and more likely to engage in preventative action (Klein & Helweg-Larsen, 2002; Shepperd et al., 2015; Weinstein, 1982). However, the opposite can also happen, as people can overestimate their control and put themselves in more risky situations and engage in more risky behavior (Puchades et al., 2018).

Additionally, anxiety is another factor that could affect unrealistic optimism, but the nature of this relationship is unclear. Multiple studies found that more anxiety was linked with less unrealistic optimism and less anxiety was linked with more unrealistic optimism (Dewberry et al., 1990; Moen & Rundmo, 2005). In contrast, Nesse and Klaas (1994) found that high anxiety was associated with more unrealistic optimism. In addition, some studies have found that anxiety may be indirectly related to unrealistic optimism through controllability (Dewberry et al., 1990; Moen & Rundmo, 2005). Thus, the impact of anxiety on unrealistic optimism is unclear and may be due to the interaction of multiple factors.

Two interacting factors that also tend to impact whether or not individuals display unrealistic optimism are the frequency of an event and the event valence (e.g., positive or negative; Shepperd et al., 2017; Shepperd et al., 2015). For instance, some studies have found that individuals are more likely to display unrealistic optimism for common and favorable events (e.g., getting married) and rare and unfavorable events (e.g., experiencing a tsunami) than for common and unfavorable events (e.g., getting allergies) and rare and favorable events (e.g.,

winning a backstage concert pass; Shepperd et al., 2017). When it comes to unrealistic optimism about unfavorable common events, some researchers suggest people are less likely to be unrealistically optimistic because these events tend to happen to a lot of people, which decreases individuals' beliefs that they may bypass these negative events (Shepperd et al., 2017; Shepperd et al., 2015). On the other hand, some research has also found that people do showcase unrealistic optimism about common and unfavorable events (Rothman et al., 1996), perhaps because egocentrism leads them to believe their risk is lower than other individuals (Rothman et al., 1996; Shepperd et al., 2015; Weinstein 1982).

Another factor that could impact whether or not someone displays unrealistic optimism is if an event is in the near future or far future. People tend to display more unrealistic optimism for events in the far future than in the near future because in the near future they have more information informing them of their chances of events happening to them (Shepperd et al., 2015).

Finally, previous experience with an outcome may also impact the presence of unrealistic optimism. Specifically, previous experience tends to reduce unrealistic optimism, as people already know the risks involved and may not believe they are exempt from these risks (Shepperd et al., 2015; Weinstein 1987). However, it should be noted that this is not always the case, as some studies have demonstrated that individuals with prior experience with an issue may have more unrealistic optimism (Hevey et al, 2014; Taylor et al., 1992). Thus, it seems that the presence of unrealistic optimism and whether the consequences of such are positive or negative are related to a number of interacting factors.

Unrealistic Optimism and Mental Health

There have been several studies examining unrealistic optimism in terms of overall health and health behaviors; however, there has generally been less research focusing specifically on one's unrealistic optimism for *mental* health issues. While mental health is often encompassed and measured within the broader domain of health (e.g., Weinstein,1982), this poses a problem, as one study (Nezlek & Zebrowski, 2001) found that unrealistic optimism pertaining to health was not unidimensional. Nezlek and Zebrowski (2001) found that health is better understood as five distinct factors: common factors, mixed factors, substance abuse, sexuality, and mental health. Furthermore, the authors found that only unrealistic optimism about mental health, and not the other four factors (i.e., common factors, mixed factors, substance abuse, and sexuality) was negatively correlated with psychological wellbeing and dispositional optimism. Thus, it's important to look at mental health as separate from other aspects of health, as unrealistic optimism of mental health risk may impact psychological wellbeing and dispositional optimism (Nezlek & Zebrowski, 2001).

One of the most common barriers to positive mental health is depression. The theory of depressive realism suggests that individuals with low levels of depressive symptoms are more likely to be optimistic than those with more severe depressive symptoms (Alloy & Abramson, 1979). There are two hypotheses for why those with more severe symptoms of depression have low optimism: the depressive bias hypothesis and the depressive accuracy hypothesis (Ackermann & DeRubeis, 1991; Strunk et al., 2006). The depressive bias hypothesis asserts that individuals with higher levels of depression are more likely to showcase negative bias in the form of unrealistic pessimism when determining their likelihood of encountering events (i.e., thinking they are more likely to encounter negative events). The depressive accuracy hypothesis

states that individuals with higher levels of depressive symptoms are more likely to be realistically optimistic and accurate. One article (Strunk et al., 2006) found that low levels of depressive symptomatology was associated with unrealistic optimism, mid-levels of depressive symptomatology was associated with realistic optimism, and high levels of depressive symptomatology was associated with unrealistic pessimism. This has important implications for future studies, as individuals with depression can showcase different biases depending on their level of depression.

Studies of mental health, unrealistic optimism, and help seeking behaviors suggest that individuals who are unrealistically optimistic about mental health believe they are less likely to be affected by emotional and behavioral issues than other people and less likely to seek help (Mahatane & Johnson, 1989; Raviv et al., 2000; Spendelow & Jose, 2010). Raviv et al. (2000) found that the more severe the problem (e.g., stress vs. depression), the more likely individuals were to seek help for themselves. However, Spendelow and Jose (2010), found that even as the severity of a problems increases, college students may be more likely to be unrealistically optimistic about handling depressive symptoms better, having less severe symptoms, and having less need to seek help than their peers.

It should be noted that some studies argue that unrealistic optimism is associated with positive mental health and behaviors, such as protection from negative emotions, the ability to care for others, the ability to be happy or content, and the ability to engage in productive and creative work (Dillard et al., 2009; Taylor & Brown, 1988; Taylor & Brown, 1994). However, most of these studies were correlational in nature and did not examine the consequences of unrealistic optimism on mental health over time. One could also argue that positive mental health due to unrealistic optimism is a proximal or short-term effect and that over time unrealistic

optimism could create more issues (e.g., higher likelihood of engaging in risky behaviors which could impact mental health negatively). Currently, there seem to be limited longitudinal studies examining more long-term positive mental health outcomes of unrealistic optimism.

Overall, the literature on unrealistic optimism and mental health indicates that people, including college students, believe they are less likely to be affected by mental health issues, less likely to seek or need help for mental health issues, and more likely to have a good prognosis for mental health issues than their peers (Mahatane & Johnson, 1989; Raviv et al., 2000; Spendelow & Jose, 2010). Depression severity is one of several factors that seems to influence the likelihood of unrealistic optimism. Depressed individuals are less likely to be unrealistically optimistic than the average person but they can also have unrealistic optimism (Spendelow & Jose, 2010; Strunk et al., 2006). While there are quite a few studies looking at unrealistic optimism and mental health, most of the literature on unrealistic optimism groups mental health with other health outcomes. Furthermore, most of the literature on unrealistic optimism about mental health is not longitudinal nor does it examine the actual outcomes or consequences of unrealistic optimism about mental health. Thus, there appears to be a need for more longitudinal and outcome-based research on unrealistic optimism of mental health specifically.

Across several publications, Shepperd et al. (2013, 2017, 2015) critiques studies on unrealistic optimism. Of particular interest for the current study is the criticism that many studies of unrealistic comparative optimism examine events that are rare/unfavorable and common/favorable. While these studies find high rates of unrealistic optimism, the overall rate may not be as high as the literature indicates because there are not enough studies examining unrealistic optimism for common/unfavorable and rare/favorable events (Shepperd et al., 2017).

Thus, the current study helps address this issue by contributing to the literature on common, unfavorable events.

Another issue identified by Shepperd et al. (2017) is that many of the articles on unrealistic optimism predict consequences but fail to actually measure these consequences. This is extremely important, as what makes unrealistic optimism so intriguing to the health field is its potential to influence behavior. Without actually measuring the consequences, the importance of measuring unrealistic optimism is far less significant. One reason that researchers fail to examine consequences accurately is that they may use the same criteria to determine if the individual is unrealistically optimistic as they do to assess the consequences of unrealistic optimism. One way to circumnavigate this issue is to make sure that the outcome is being assessed independently by a proxy variable (Shepperd et al., 2017).

Shepperd et al. (2017) offers Dillard et al. (2009) as an "excellent" (Shepperd et al., 2017; p. 75) example of how to measure unrealistic optimism consequences independently of unrealistic optimism risk perceptions. In this study, Dillard et al. (2009) measured unrealistic comparative optimism at the individual level at timepoint one and two (T1 and T2) by having college students at a northeastern liberal arts college assess their perceptions of own personal risk of having an alcohol problem compared to peers (i.e., risk assessment) and then reporting their actual frequency of alcohol consumption at the time of measurement (i.e., objective measure). The risk assessment and objective measure were compared to one another to group participants into unrealistic optimism, realistic, or unrealistic pessimism groups.

Dillard et al. (2009) then examined the future consequences of unrealistic optimism. The authors measured consequences by using a longitudinal study design in which they assessed whether unrealistic optimism at the beginning time points (T1 and T2) were related to

consequences of alcohol consumption over the course of two years (T2, T3, and T4). The authors found that college students who were unrealistic about having severe alcohol problems at T1 and T2 were more likely than their realistic peers to experience negative alcohol related events at T2, T3, and T4. Shepperd et al. (2017) champions this study because it was longitudinal, and the criterion used to assess unrealistic optimism (risk assessment) is not the same measure being used to assess the consequence (alcohol related events).

The current study aimed to contribute to the limited literature on the consequences of unrealistic optimism. Following the example of Dillard et al. (2009), this study assessed consequences of unrealistic optimism over time and was carefully designed to avoid issues of confusion about the predictor and criterion variable found in previous literature (Dillard et al., 2019; Shepperd et al, 2017).

Transition From High School to College

The current study will focus on first year college students rather than the general population due to the high rate of mental health concerns in the college student population. The transition from high school to college can be an exciting but difficult time for first year college students due to several factors such as gaining more independence and adult responsibilities (Pedrelli et al., 2015), more involvement in and navigation of serious romantic relationships (Arnett, 2000), figuring out future employment and careers (Arnett, 2000), exploration and change of roles, worldviews, and identities (Arnett, 2000), and lastly more likelihood of risk taking behaviors (Pedrelli et al., 2015). College students' mental health can be affected by this freedom (Unwin et al., 2013; Von ah et al., 2003), as demonstrated by the elevated rates of mental health problems (e.g., depression, anxiety, substance use) among students on college campuses (Auerbach et al., 2018; Eisenberg et al. 2013; Pedrelli et al., 2015). Of these mental

health issues, depression and anxiety are highly prevalent on college campuses and likely related to the new responsibilities college puts on students (Eisenberg et al., 2013).

Stern (1966) coined the "freshman myth" as a way to conceptualize the idea that many high schoolers enter into their first year of college with high, overly confident, unrealistic expectations of college academic and non-academic experiences. In a way, the freshman myth is a form of unrealistic optimism. Unrealistic expectations of the first year can lead to health problems such as stress and disillusionment (Krallman & Holcomb, 1997).

Summary and Research Questions

Overall, unrealistic optimism tends to be associated with more risky behaviors and less health promoting behaviors. Studies of unrealistic optimism tend to focus on general health or more specific physical health problems rather than mental health. Furthermore, the unrealistic optimism literature tends to overlook the consequences of unrealistic optimism and fails to examine these consequences longitudinally. Thus, the current study aimed to fill these gaps found in the unrealistic optimism literature. The current study focused specifically on college students, as the transition to college is often a stressful time for young adults. Many first-year students come in with idealistic representations of college life and when these expectations are unmet over the course of their first year, they may experience reduced wellbeing. Yet, studies of unrealistic expectations about mental health in college students and its consequences are limited. Therefore, utilizing Dillard et al. (2009) as an exemplar, the present study sought to explore first year college student's assessment of mental health (depression and anxiety) risk and the implications of group status (i.e., unrealistic optimists, realists, and unrealistic pessimists) at the beginning of the first semester of college (T1) on psychological wellbeing and mental health promoting/prevention behaviors at the end of their first semester of college (T2).

First, I hypothesized, that at the end of the first semester of college (T2), participants in the unrealistically optimistic about depression and anxiety groups would report more depressive symptoms, anxiety symptoms, and negative affect on average than participants in the realistic about depression and anxiety groups when controlling for negative affect and/or social desirability at the beginning of the first semester of college (T1). Additionally, I hypothesized that at T2, participants in the unrealistically optimistic about depression and anxiety groups would report less life satisfaction, positive affect, and heath promoting behaviors on average than participants in the realistic about depression and anxiety groups when controlling for social desirability, life satisfaction, positive affect, and health promoting behaviors at T1.

Method

Participants

The original study design included ten, one-way analyses of covariance (ANCOVA) to examine if anxiety or depression group status (unrealistic optimism, realistic) at T1 would predict psychological well-being at T2, when controlling for social desirability and/or psychological wellbeing at T1. To conduct this study and achieve a small to medium effect size with a power of .80 and an α set at .05, it was necessary to recruit and retain 152 participants from T1 to T2 when conducting one-way ANCOVAs with two groups and two covariates or two groups and one covariate. The current study was conducted over 2 years to reach this minimum sample size: August 25, 2021 to September 10, 2021 (T1) and November 7, 2021 to November 13, 2021 (T2) and from August 19, 2022 to September 17, 2022 (T1) and November 14, 2022 to November 22, 2022 (T2).

Of the original 286 participants at T1, 33 were not first year students, 71 did not complete a measure and therefore were not asked to complete the T2 survey, and four entered multiple

submissions, of which the most complete survey was kept or if the duplicated surveys were all complete then the one completed first was kept. Thus, 108 participants of the original T1 participants were excluded from the final sample. This left an *initial* total sample size of 179 participants at T1.

Due to concerns about how quickly some of the surveys in T1 had been completed, the interquartile range (IQR) method was used to determine the presence of outliers for duration of time it took to complete the survey at T1. Field and Miles (2010) suggest that any value that is 1.5 times the IQR outside of quartile one (25%) or quartile three (75%) is considered an outlier. There were no low-end outliers, which was the concern of the researcher. There were high end outliers; however, I decided to not remove these participants due to the likelihood that the participants may have left and kept their survey screen open and then later returned to finish it. Thus, the IQR method did not lead to any further reduction in the T1 sample size.

Of the original 170 participants at T2, only 104 participants completed both the T1 and T2 surveys. Again, the researcher was concerned about low end survey duration outliers at T2. The same IQR method used to analyze the T1 dataset was utilized; similar results were found (i.e., only high-end outliers) and the researcher came to the same conclusion to keep these respondents. Thus, the final T1 and T2 paired dataset had 104 participants. Overall, due to the specific nature of the population selected for this study (first year students), short time span of data collection (first college semester), as well as the ongoing effects of the Coronavirus-19 (COVID-19) pandemic, I did not achieve the goal of retaining 152 participants despite two years of extensive recruitment efforts.

However, per recruitment plan D in the prior proposal, if I was able to collect 152 responses at T1 then I would adjust the study and for the primary analysis run cross sectional

analyses on the T1 data alone, while also still exploring longitudinal outcomes for the 104 participants who had complete data for both time points. Since this is the plan I followed, eight participants were added back into the initial T1 data set (N =179) to be analyzed, as these eight participants had completed every part of the T1 survey except for the Health Promoting Life-Style Profile Second Edition (HPLP-II) and demographics. This resulted in a *final* total T1 data set sample size of 187 participants. It should be noted, however, that only 178-179 participants were analyzed for demographic variables, as the eight incomplete surveys that were added back into the data set did not include demographic information.

Tables 1, 2, and 3 provide information about the demographic characteristics of the final sample (N = 187) used in the primary analyses. Participants in the current sample ranged from 18 years old to 28 years old, with an average age of 18.26 (SD = 1.02). Additional demographics for the current study indicated that the majority of individuals were assigned female at birth (72.6%; see Table 1), identified their gender identity as female (69.3%, see Table 1) identified as straight (75.3%; see Table 2), and identified as Non-Hispanic White/Caucasian (81.6%; see Table 2). Furthermore, the majority of participants. identified their parent/legal guardian's highest educational attainment as a Bachelor's degree (38.5%) or a Master's degree (34.1%; see Table 3).

Measures

Demographics Questionnaire. All participants were asked to complete a demographic questionnaire, which included information about sex, gender, race and ethnicity, sexual orientation, socio-economic status, age, and year in college (see Appendix A).

Patient Health Questionnaire – 9. The Patient Health Questionnaire – 9 (PHQ-9; Kroenke et al., 2001) is a 9-item self-report measure (see Appendix B) assessing the severity of symptoms of major depression. The PHQ-9 is the depression module from the full Patient Health Questionnaire (PHQ; Spitzer et al., 1999). The PHQ in its entirety assesses eight diagnoses that map onto disorders from the *Diagnostic and Statistical Manual* (4th ed.; DSM-IV; American Psychiatric Association, 1994), with depression being one of them. The nine main questions on the PHQ-9 map onto depressive diagnostic criteria (Kroenke et al., 2001). Individuals are asked to assess how often they had been bothered by the 9 symptoms (i.e., the survey items) over the past two weeks. Scores on the nine items are summed up to create a total PHQ-9 score. Scores from 0-4 indicate no depression severity, scores from 5-9 indicate mild depression severity, scores from 10-14 indicate moderate depression severity, scores from 15-19 indicate moderately severe depression severity, and scores from 20-27 indicate severe depression severity. The internal reliability of the PHQ-9 for this study is .86 and is considered good. For the purpose of this study, the total severity score on the PHQ-9 at T1 was used to group individuals into depressive unrealistic optimists, realists, and unrealistic pessimists. In addition, the total severity score on the PHQ-9 at T2 was used in the exploratory analyses as a measure of psychological well-being.

Generalized Anxiety Disorder – 7. The Generalized Anxiety Disorder – 7 (GAD-7; Spitzer et al., 2006) is a 7-item measure (see Appendix C) comprised of questions assessing one's severity of anxiety. The items on the scale either map onto DSM-IV symptom criteria for generalized anxiety or reflect items from previous anxiety scales. Individuals are asked to assess how often they have been bothered by the 7 problems (i.e., the survey items) over the past two weeks. Scores on the seven items are summed up to create a total GAD-7 score. Scores from 0-4

indicate no anxiety severity, scores from 5-9 indicate mild anxiety severity, scores from 10-14 indicate moderate anxiety severity, scores from 15-21 indicate severe anxiety severity. The internal reliability of the GAD-7 is .88 for this study and considered to be good. The total severity score on the GAD-7 at T1 was used to group individuals into anxious unrealistic optimists, realists, and unrealistic pessimists. The total severity score on the GAD-7 at T2 was used in the exploratory analyses, as a measure of psychological wellbeing.

Satisfaction with Life Scale. The Satisfaction with Life Scale (SWLS; Diener et al., 1985) is a 5-item measure (see Appendix D**)** that assesses one's satisfaction with life using a 7-point Likert scale. Item ratings are summed together to create a total life satisfaction score with scores of 5-9 indicating that participants are extremely dissatisfied with their life, scores of 10-14 indicating that participants are dissatisfied with their life, scores of 15-19 indicating that that participants life satisfaction is slightly below average, scores of 20-24 indicating average life satisfaction for participants, scores of 25-29 indicating high life satisfaction for participants, and scores of 30-35 indicating that participants are highly satisfied with their life (Diener, 2006). In this study, the internal consistency reliability of the SWLS is .86 and considered good. Total life satisfaction scores on the SWLS were used to assess satisfaction with life at T1 in the primary analyses and at T2 in the exploratory analyses, as measures of psychological wellbeing.

Positive and Negative Affect Schedule. The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) is a self-report, 20-item measure (see Appendix E) that assesses one's positive and negative affect. The PANAS is comprised of 10 items that contribute to the Positive Affect (PA) scale and 10 items that contribute to the Negative Affect (NA) scale. Using a 5-point Likert scale, participants are asked to rate the extent to which they have felt different feelings and emotions right now, today, the past few days, during the past week, during the past

few weeks, during the past year, or in general. In regard to this study, participants rated their feelings and emotions during the past few weeks at T1 and T2 in order to measure their positive and negative feelings over the course of the semester. Items on the PA are added together to create a positive affect score and items on the NA are added together to create a negative affect score. Lower scores indicate lower levels of the corresponding affect, and higher scores indicate higher levels of the corresponding affect. In this study, the PANAS internal consistency reliabilities are .85 for the PA scale and .87 for the NA scale, which are both considered to be good. Total NA scores on the PANAS were used to assess negative affect at T1 in the primary analyses and at T2 in the exploratory analyses, as measures of psychological wellbeing. Total PA scores on the PANAS were used to assess positive affect at T1 in the primary analyses and at T2 in the exploratory analyses, as measures of psychological wellbeing.

Marlowe-Crowne Social Desirability Scale – Short Form. The Marlowe-Crowne Social Desirability Scale – Short Form (M-C SDS Short Form; Reynolds, 1982) is a shorter version of the original 33 item Marlow-Crowne Social Desirability Scale (Crowne & Marlowe, 1960). The short form has been found to be a viable substitute measure of the original 33-item social desirability scale (Reynolds, 1982). The 13-item short form (see Appendix F) assesses whether participants are responding to other measures in a socially desirable way to gain approval. Higher scores indicate a tendency to respond in a socially desirable and biased way. Total M-C SDS Short Form scores were used to assess social desirability response biases at T1 as a covariate. In this sample the M-C SDS had an internal consistency reliability of .71, which is considered acceptable. This scale was included in the current study measures as Dillard et al. (2009) also included a version of the MC-SDS in their study.

Health Promoting Life-Style Profile – II. The Health Promoting Life-Style Profile – II (HPLP-II; Walker et al., 1995) is a 52-item measure (see Appendix G) that assesses a health promoting lifestyle. The measure is composed of six subscales: health responsibility, spiritual growth, physical activity, interpersonal relationships, nutrition, and stress management. Participants are asked to rate the current frequency in which they participate in behaviors related to these six subscales. To find the subscale and total scores, responses to the items are averaged. Summed total scores ranging from 52-90 (i.e., averages ranging from 1- 1.73) indicate poor health-promoting behaviors, 91-129 (i.e., averages ranging from 1.75 – 2.48) indicate moderate health promoting behaviors, 130-168 (i.e., averages ranging from 2.5 -3.2) indicate good health promoting behaviors, and 169-208 (i.e., averages ranging from 3.25 -4) indicate excellent health promoting behaviors (Alzahrani et al., 2019). The internal consistency reliability for the HPLP-II total scale for this study is .93, which is considered excellent. Total health promoting scores the HPLP-II were used to assess a health promoting lifestyle at T1in the primary analyses and at T2 in the exploratory analyses, as measures of psychological wellbeing. Two additional questions asking about previous counseling or psychological services were added to the survey at T2 as another measure of a health promoting lifestyle, although no formal hypotheses about these items were proposed.

Unrealistic Optimism Risk Assessment. Three items were created to determine perceived mental health risk at T1 as part of a three-step process to group participants in either unrealistic optimism groups, realistic groups, or unrealistic pessimism groups (see Appendix H). These items were developed and based off two risk perception items in Dillard et al. (2009), which assessed unrealistic optimism about problems with alcohol in an undergraduate sample. Due to the small number of participants categorized as unrealistically pessimistic, Dillard et al.

(2009) combined the unrealistic pessimist group into the realistic group. The present study had planned to follow that approach; however, a large number of unrealistically pessimistic participants were found, so three groups instead of two (unrealistically optimistic, realistic, and unrealistically pessimistic) were examined for both anxiety and depression.

In Dillard et al. (2009), researchers asked the participants, "How do you feel your own chances of having alcohol poisoning in the next year compare to those of other university students of your age and sex?" and "How do you feel your own chances of having a drinking problem at some time in your life compare to those of other university students of your age and sex?" (p. 1544). Using similar language, the first step in our determination of these groups (unrealistic optimism, realistic, unrealistic pessimism) was to have participants answer three items assessing risk for mental health: "How do you feel your chances of having a diagnosable mental health condition in the next six months compare to those of other university students of your age and sex?", "How do you feel your own chances of having symptoms of anxiety in the next six months compare to those of other university students of your age and sex?", and "How do you feel your own chances of having symptoms of depression in the next six months compare to those of other university students of your age and sex?" Participants responded using a 7-point Likert scale (1= much below average to 7 = much above average), similar to Dillard et al. (2009). The scores on the first question and the second question were averaged to create a total anxiety risk assessment score. The first question and the third question were averaged to create a total depression risk assessment score.

In Dillard et al. (2009), the authors determined that anyone with a total risk assessment score below 4 would be deemed below average risk, those who scored a 4 would be average, and those with a score above 4 would be grouped in the above average group. In this current study,

the data was examined, and a cutoff score was determined, similar to the approach in Dillard et al. (2009), to allow for the creation of three groups: below average risk perception, average risk perception, and above average risk perception. For the primary analyses (T1) of the present study anyone with a total risk assessment score between 1 and 3.5 were deemed below average risk perception for anxiety and depression, those who scored between 4 and 5 were considered average risk perception for anxiety and depression, and those between 5.5 and 7 were grouped into the above average risk perception for anxiety and depression. The same cutoffs were used for the exploratory analyses (T1 and T2) related to depression risk groups; however, for the exploratory analyses related to anxiety risk groups anyone with a total anxiety risk assessment score between 1 and 4 were deemed below average risk perception for anxiety, those who scored between 4.5 and 5 were considered average risk perception for anxiety, and those between 5.5 and 7 were grouped into the above average risk perception for anxiety.

In the second step in creating the grouping variables, participants provided symptom reports of anxiety and depression (i.e., GAD-7 and PHQ-9) that were used to create a below average, average, and above average group for *actual* experiences of anxiety and depression symptoms. To do this, the GAD-7 and PHQ-9 scores were standardized. For both measures, anyone with a score of .5 *SD* or greater from the mean was labeled above the group average, those with scores below -.5 *SD* from the mean were labeled below the group mean, and those whose scores were between .5 *SD* and -.5 *SD* from the mean were considered average in their symptoms of anxiety or depression in comparison to the rest of the study sample.

In the final step of creating the groups, the risk perceptions were matched to symptom reports (e.g., GAD-7 or PHQ-9) to determine group placement (see Table 4). Those participants who demonstrated below average anxiety or depression risk perception, but average or above

average GAD-7 or PHQ-9 total scores were placed into the unrealistically optimistic anxiety or depression groups, respectively. Similarly, if participants demonstrated average anxiety or depression risk perception, but above average GAD-7 or PHQ-9 total scores, then they were also placed into the unrealistically optimistic anxiety or depressive groups, respectively. Those participants who demonstrated above average anxiety or depression risk perceptions, but below average or average GAD-7 or PHQ-9 total scores were placed into the unrealistically pessimistic anxiety or depression groups, respectively. Similarly, if participants demonstrated average anxiety or depression risk perception, but below average GAD-7 or PHQ-9 total scores, then they were also placed into the unrealistically pessimistic anxiety or depressive groups, respectively. Participants with different combinations than those just mentioned of risk perception and symptom reports were placed into the realistic anxiety or depressive groups.

Procedure

Xavier University's Institutional Review Board (IRB; see Appendices I, J, K, L, and M) granted approval for all study procedures. Before the beginning of the 2021 school year, the investigator reached out to faculty teaching psychology and first year seminar classes to ask if they would be willing to advertise the investigator's study in class and/or via a Canvas announcement once the study was approved by the IRB. Several agreed, and once the study was approved by the IRB, they were sent a short script/announcement that included the purpose of the study, inclusionary criteria, and a hyperlink to Sona, the Xavier University online participation pool, to sign up for the survey. Non-psychology professors teaching first year seminar courses were given a very similar script/announcement with the only difference being a direct hyperlink to the Qualtrics survey. In addition, the IRB approved additional recruitment efforts (see Appendices J and L) that included advertising through Psi Chi/Psych Club, student

activity organization leaders, the Psychology HUB, an email from the Sona coordinator, and researchers going in person to classes and residence halls to deliver the recruitment script.

Participants in the psychology courses signed up for the study via Sona, as that is the platform through which they receive course credit for research participation. Once they signed up through Sona, participants accessed the Qualtrics link. Students in other first year classes accessed the study directly through a Qualtrics link, as they did not need to be granted research credit. Students in psychology courses completing the survey for research credit received 1 credit hour of research contingent on completing both surveys at T1 and T2. Students in other classes completed the survey for a $10.00 Chipotle gift, contingent on completing the surveys at T1 and T2. Signing up through Sona or directly accessing the Qualtrics link was restricted to the first two to four weeks of the fall semester.

Participants completed the online survey on Qualtrics where they provided informed consent (See Appendix N) and were asked to create an alphanumeric ID that allowed their T1 and T2 data to be linked. Participants then filled out risk perception questions, the GAD-7, PHQ-9, HPLP-II, PANAS, M-C SDS Short Form, and the SWLS. The risk perception questions, PHQ-9, and GAD-7 were presented in counterbalanced order to control for possible order effects. Following the counterbalanced measures, the SWLS, PANAS, M-C SDS Short Form were presented in this order for every participant. Finally, participants completed the demographics questionnaire.

At the end of the survey at T1, psychology participants were screened and directed to a separate Qualtrics link to provide their first and last names and their email addresses. Non-psychology students were screened and directed to another separate survey where they provided the same information. At the end of these separate surveys, the students were given a debrief

form (See Appendix O). The purpose of the separate surveys was to separate personal information from response data, allowing the data to be anonymous. This personal information was needed so that the researcher could contact the participants via email to complete the second survey at the end of the fall semester.

The researcher emailed the participants who had completed the T1 survey to complete the T2 survey during the last one to two weeks of the fall semester (prior to finals week). For psychology students, the email contained a link to Sona where psychology students could access the Qualtrics link. Those in other classes were provided with the direct Qualtrics link in the email. At the beginning of the survey at T2, participants again gave informed consent and re-entered their alphanumeric ID to allow T2 responses to be matched to their T1 responses. The measures completed at T2 included the GAD-7, PHQ-9, HPLP-II, PANAS, and the SWLS. At the end of the survey, the participants in psychology classes were directed to the same debrief form and then asked to click a link which re-directed them back to Sona where Sona automatically granted these students 1 hour of research credit. However, a problem occurred in the fall of 2021 where Sona did not automatically grant ten students credit. Xavier University's IRB approved the researcher's modification request (See Appendix K) to email all possible survey participants and ask for their alphanumeric IDs and names if they had not been granted credit. The researcher granted these students credit manually and then promptly destroyed these emails.

Those in other classes were directed to the same debrief form and then asked to click a link that redirected them to a separate Qualtrics link to fill out their first and last names, Banner IDs, phone numbers, and the first and last names of the people who advertised the survey to them. The personal information in this separate survey was needed to fulfill university policy

regarding the distribution of gift cards to students. Students who had completed both T1 and T2 surveys picked up the gift cards from a campus office.

As mentioned, at the end of each session of data collection (T1 and T2), the participants were debriefed. The debrief form contained information about counseling available to the participants at the Health United Building (HUB) and the Psychological Services Center (PSC) should they experience any psychological distress as a result of participating in the study.

During T2 data collection in the fall of 2022, four students completed the survey but were unable to access the separate link to input their gift card information and one student never received credit on Sona. Thus, Xavier University's IRB (See Appendix M) allowed the researcher to email all participants and ask those who did not complete the gift card survey and those who did not receive Sona credit to email their alphanumeric ID and names to the researcher. This allowed the researcher to give those four students the separate link to fill out gift card information and the one student was granted research credit. The researcher destroyed these emails immediately after granting credit and sending the survey link.

Following two years of data collection and having used additional and extensive recruitment strategies, data collection was ceased. The minimum sample size of 152 participants was not met despite these efforts; thus, the recruitment plan D in the proposal was utilized: focus primary analyses on T1 data responses only and explore any longitudinal associations with the smaller sample of participants who had both T1 and T2 data.

Results

The purpose of the present study was to examine the relationship between first year college student's mental health group status (i.e., unrealistic optimists, realists, and unrealistic pessimists) at the beginning of the first semester of college (T1) and psychological wellbeing and

health promoting behaviors at the end of their first semester of college (T2), when controlling for social desirability and the corresponding dependent variable at T1. The independent variable was group status (as measured by the unrealistic optimism risk assessment) and the dependent variables were psychological wellbeing (as measured by the GAD-7, PHQ-9, SWLS, and PANAS) and health promoting behaviors (as measured by the HPLP-II).

Using Cohen's (1988) method of power analysis run by the G*Power 3 software (Faul et al., 2009), 152 participants were needed to have .80 power to detect a small to medium effect size (i.e., Cohen's $f = 0.23$) with α set at .05 when conducting a one-way ANCOVA with two groups and one covariate. As mentioned, 152 participants were not retained from T1 to T2, so the proposed analyses were adjusted to be cross-sectional, as per plan D in the proposal. In making the analyses cross sectional the aim was to explore and examine the T1 sample to investigate if group status would be associated with psychological wellbeing and health promoting behaviors at T1, when controlling for social desirability.

Thus, in following plan D, hypotheses related to the GAD-7 and PHQ-9 as dependent variables were removed as these measures cannot be used as part of the grouping variables and then also as outcome measures at the same time point. This updated the dependent variables to only include the measures of SWLS, PANAS, and HPLP-II. Hypotheses three through six remained the same except that the focus became only on T1 and not on both T1 and T2, which made the analyses include only one covariate (M-C SDS Short form) rather than the planned two covariates (e.g., Time 1 level of SWLS, PANAS, or HPLP-II and M-C SDS Short Form).

Since the analyses became cross-sectional, eight participants were added back into the data set to be analyzed, as these individuals had completed every part of the survey except for the HPLP-II and demographics. This made the T1 data set 187 participants. Thus, ANCOVAs

analyzing satisfaction with life, positive affect, and negative affect included 187 participants while ANCOVAs analyzing health promoting behaviors included 179 participants. In the analyses with 187 participants, there were 110 realists, 39 unrealistic optimists, and 38 unrealistic pessimists within the depression groups. There were 105 realists, 36 unrealistic optimists, and 46 unrealistic pessimists in the anxiety groups. For the health promoting behavior analyses there were 179 participants. In those analyses, there were 105 realists, 37 unrealistic optimists, and 37 unrealistic pessimists in the depression groups, and there were 101 realists, 35 unrealistic optimists, and 43 unrealistic pessimists in the anxiety groups.

In recruitment plan D there was supposed to be a total sample size of 152 participants. The researcher, in following Dillard et al. (2009), expected to find a small number of unrealistic pessimists which would allow the researcher to combine the pessimists with the realists, making an overarching realist group. Therefore, I expected to have two groups: realists and unrealistic optimists; instead, I found more unrealistic pessimists and realists than expected. Thus, I found three groups. With finding three groups, I re-ran Cohen's (1988) method of power analysis run by the G*Power 3 software (Faul et al., 2009), and discovered 187 participants were needed to have .80 power to detect a small to medium effect size (i.e., Cohen's $f = 0.23$) with α set at .05 when conducting a one-way ANCOVA with three groups and one or two covariates.

Furthermore, with two groups and a total sample size of 152, the study needed a minimum of 76 participants in each depression or anxiety group (realistic and unrealistic optimism). Now with three groups there should have been a minimum of 63 participants in each of the three groups, making the total needed sample size 189 participants. With this knowledge, we did not meet the needed sample size of 189 participants at T1 (i.e., 187 for PA, NA, and SWLS and 179 for the HPLP-II) nor the minimum group sample size of 63 participants. As plan

D specified we could run analyses if we met 152 participants at T1 with no specification of number of groups, I moved forward with the primary analyses. Since the minimum group sample sizes for the unrealistic optimism and pessimism groups was not met (even when the sample size was 152 participants), I reached out to the committee for approval to go ahead with plan D despite the unexpectedly smaller group sizes which the committee approved. Therefore, the primary analyses conducted below were on the T1 data set.

I also conducted exploratory analyses to understand any trends in the longitudinal data. Within this dataset there were 104 participants who completed both T1 and T2 surveys. Of those 104 participants, there were 19 unrealistic optimists, 57 realists, and 28 unrealistic pessimists in the anxiety groups and 23 unrealistic optimists, 56 realists, and 25 unrealistic pessimists in the depression groups.

Primary Analyses

Descriptive statistics for the study variables are listed in Table 5. Two one-way analyses of covariances (ANCOVA) were conducted to test the third hypothesis. For the first ANCOVA, the independent variable, depression group status, included three levels: unrealistic pessimists, realists, and unrealistic optimists. The dependent variable was life satisfaction, and the covariate was social desirability. A preliminary analysis evaluating the homogeneity-of-slopes assumption indicated that the relationship between the independent variable (depression groups) and the dependent variable (life satisfaction) did not differ significantly as a function of the covariate (social desirability), $F(2, 181) = 1.10$, $p = .34$. Thus, homogeneity-of-slopes is assumed. Furthermore, Levene's test of equality of error was not significant, $F(2,184) = 1.27$, $p = .28$, so homogeneity of variance was also assumed. The ANCOVA was not significant (see Table 6), suggesting that there is no relationship between depression group status and satisfaction with life,

when controlling for social desirability. The relationship between social desirability and satisfaction with life was significant (see Table 6).

For the second ANCOVA, the independent variable, anxiety group status, also included three levels: unrealistic pessimists, realists, and unrealistic optimists. The dependent variable was life satisfaction, and the covariate was social desirability. A preliminary analysis evaluating the homogeneity-of-slopes assumption indicated that the relationship between the independent variable (anxiety groups) and the dependent variable (life satisfaction) did not differ significantly as a function of the covariate (social desirability), $F(2,181) = .47$, $p = .63$. Thus, homogeneity-of-slopes is assumed. Furthermore, Levene's test of equality of error was not significant, $F(2,184) = .12$, $p = .89$, so homogeneity of variance was also assumed. The ANCOVA was not significant (see Table 6), suggesting that there is no relationship between anxiety group status and satisfaction with life, when controlling for social desirability. The relationship between social desirability and satisfaction with life was significant (see Table 6)

Two one-way analyses of covariances (ANCOVA) were also conducted to test the fourth hypothesis. For the first ANCOVA, the independent variable, depression group status, also included the same three levels. The dependent variable was positive affect, and the covariate was social desirability. A preliminary analysis evaluating the homogeneity-of-slopes assumption indicated that the relationship between the independent variable (depression group) and the dependent variable (positive affect) did not differ significantly as a function of the covariate (social desirability), $F(2,181) = .45$, $p = .64$. Thus, homogeneity-of-slopes is assumed. Furthermore, Levene's test of equality of error was not significant, $F(2,184) = 1.31$, $p = .27$, so homogeneity of variance was assumed. The ANCOVA was significant, suggesting that there is a relationship between depression group status and positive affect, when controlling for social

desirability (see Table 7). The relationship between social desirability and positive affect was significant (see Table 7).

The means of positive affect adjusted for initial differences were ordered as such across depression groups: the realistic group had the largest adjusted mean, the unrealistic pessimism group had a smaller adjusted mean, and the unrealistic optimism group had the smallest adjusted mean (see Table 8). Follow-up tests were conducted to evaluate pairwise differences among these adjusted means. The Sidak procedure was used for the follow up tests, as it is similar to the conservative Bonferroni procedure; however, it is recommended to use the Sidak procedure if one is concerned about the loss of power due to small sample size (Field, 2013). Based on the Sidak procedure, the adjusted means for the three depression groups did not differ significantly from one another. However, some results were trending in a significant trajectory: the realist group was approaching having significantly more positive affect than the unrealistic optimism group, $p = .07$ (see Table 9).

For the second ANCOVA for hypothesis four, the independent variable of anxiety group status, included the same aforementioned three levels. The dependent variable was positive affect, and the covariate was social desirability. A preliminary analysis evaluating the homogeneity-of-slopes assumption indicated that the relationship between the independent variable (anxiety group) and the dependent variable (positive affect) did not differ significantly as a function of the covariate (social desirability), $F(2,181) = .30$, $p = .74$. Thus, homogeneity-of-slopes is assumed. Furthermore, Levene's test of equality of error was not significant, $F(2,184) = .81$, $p = .45$, so homogeneity of variance can also be assumed. The ANCOVA was not significant, suggesting that there is no relationship between anxiety group status and positive

affect when controlling for social desirability (see Table 7). The relationship between social desirability and positive affect was significant (see Table 7).

A one-way ANCOVA was planned for the depression group in hypothesis five. The independent variable of depression group had three levels. The dependent variable was negative affect, and the covariate was social desirability. A preliminary analysis was conducted to evaluate homogeneity-of-slopes between the covariate and the dependent variable across groups, an assumption underlying ANCOVA. This analysis found that the relationship between the independent variable (depression groups) and dependent variable (negative affect) differed significantly as a function of the covariate (social desirability), $F(2, 181) = 5.35$, $p = .006$. This significant difference can be seen in Figure 1, where the regression line was steeper for the realist group than the other groups.

Based on the significant results, simple main effects tests were conducted that allow for heterogeneity of slopes rather than ANCOVA. Based on the recommendation of Green and Salkind (2013), simple main effect tests were conducted to assess differences among groups at low (1 *SD* below the mean: 17.14), medium ($M = 19.98$), and high (1 *SD* above the mean: 22.82) values on the social desirability covariate. A p value of .017 (.05/3) was required for significance for each of these tests. If any one simple main effect was significant, pairwise comparisons were evaluated at the same level (i.e., $p = .017$) as the simple main effects test, following the Sidak procedure.

In conducting the simple main effect analyses, Levene's test was not significant, $F(2,184) = 2.94$, $p = .06$, suggesting homogeneity of variance. The simple main effects test was significant for a low value on the covariate (social desirability), $F(2,181) = 4.62$, $p = .011$, partial $\eta^2 = .05$. Thus, when social desirability is low, the depression groups differed significantly in their reports

of negative affect. With a low covariate value, the means of negative affect adjusted for initial differences were ordered unexpectedly across depression groups: the realistic group had the largest adjusted mean, the unrealistic optimism group had a smaller adjusted mean ,and the unrealistic pessimism group had the smallest adjusted mean (see Table 10). Based on the Sidak procedure, the adjusted means for the realistic group differed significantly from the unrealistic pessimism group, $p = .014$ (see Table 11), such that realists reported more negative affect than unrealistic pessimists when social desirability was low. Unrealistic optimism did not differ significantly from the realist or unrealistic pessimism groups at a low level on the covariate (see Table 11). When social desirability is medium, the depression groups did not differ significantly in their reports of mean negative affect, $F(2,181) = 1.22$, $p = .30$. When social desirability is high, the depression groups did not differ significantly in their reports of mean negative affect, $F(2,181) = 2.07$, $p = .13$.

For hypothesis five, a one-way ANCOVA was conducted for the anxiety group across the three levels. The dependent variable was negative affect, and the covariate remained the same. The relationship between the independent variable (anxiety groups) and dependent variable (negative affect) did not differ significantly as a function of the covariate (social desirability), $F(2,181) = 1.41$, $p = .25$. Thus, homogeneity-of -slopes can be assumed. Levene's test of equality of error was also not significant, $F(2,184) = 1.55$, $p = .22$, so homogeneity of variance was also assumed. The ANCOVA was significant, suggesting that there is a relationship between anxiety group status and negative affect, when controlling for social desirability (see Table 12). The relationship between social desirability and negative affect within anxiety groups was also significant (see Table 12).

The means of negative affect adjusted for initial differences were ordered as such across anxiety groups: the unrealistic optimism group had the largest adjusted mean, the realistic group had a smaller adjusted mean, and the unrealistic pessimism group had the smallest adjusted mean (see Table 13). Using the Sidak procedure, follow-up tests were conducted to evaluate pairwise differences among these adjusted means. The adjusted means for the unrealistic optimism group differed significantly from the unrealistic pessimism group, $p = .009$, and the realistic group, $p = .013$, such that unrealistic optimists reported more negative affect than realists and unrealistic pessimists. Unrealistic pessimism did not differ significantly from the realist group (see Table 14).

Two one-way ANCOVAs were conducted to test the sixth hypothesis. For the first ANCOVA, depression group status (three levels) was the independent variable, health preventing/promoting behaviors was the dependent variable, and the covariate remained the same. Homogeneity-of-slopes was assumed, $F(2, 173) = 1.25$, $p = .29$. Using Levene's test, homogeneity of variance was also assumed, $F(2,176) = 1.33$, $p = .27$. The ANCOVA was not significant suggesting that there is no relationship between depression group status and health promoting behaviors, when controlling for social desirability (see Table 15). The relationship between social desirability and health promoting behaviors within depression groups was significant (see Table 15).

For the second ANCOVA in hypothesis six, the independent variable (anxiety group status) had three levels, the dependent variable was health promoting behaviors, and the covariate was social desirability. Homogeneity-of-slopes was assumed, $F(2,173) = .28$, $p = .76$. Levene's test of equality of error was not significant, $F(2,176) = 1.98$, $p = .14$, suggesting homogeneity of variance. Lastly, the ANCOVA was not significant (see Table 15), suggesting

that there is no relationship between anxiety group status and health promoting behaviors, when controlling for social desirability. The relationship between social desirability and health promoting behaviors within anxiety groups was significant (see Table 15).

Exploratory Analyses

Due to limited sample size *(N* = 104), we conducted exploratory analyses to understand any possible trends in the longitudinal data. In doing this we examined the original six hypotheses. For hypothesis one, an ANCOVA was conducted. The independent variable was depression group status, the dependent variable was depressive symptom scores at T2, and the covariate was social desirability. There were three levels to the independent variable: unrealistic pessimists, unrealistic optimists, and realists. Homogeneity of variance, $F(2,101) = 1.39$, $p = .25$, and of slopes was assumed, $F(2,98) = .79$, $p = .46$. The ANCOVA was not significant nor was it trending towards significance, $F(2,100) = 1.56$, $p = .22$. With a limited sample size, there is no relationship between depression group status and T2 depressive symptoms, when controlling for social desirability at T1. However, the relationship between social desirability at T1 and T2 depressive scores was significant, $F(1,100) = 6.31$, $p = .014$, partial $\eta^2 = .06$.

For hypothesis two, an ANCOVA was conducted. The independent variable was anxiety group status, the dependent variable was anxiety symptom scores at T2, and the covariate was social desirability. There were three levels to the independent variable: unrealistic pessimists, unrealistic optimists, and realists. Homogeneity of variance, $F(2,101) = 1.35$, $p = .26$ and of slopes was assumed, $F(2,98) = 1.15$, $p = .32$. The ANCOVA was not significant nor trending towards significance, $F(2,100) = 2.16$, $p = .12$. With a limited sample size, there is no relationship between anxiety group status and T2 anxiety symptoms, when controlling for social

desirability at T1. The relationship between T1 social desirability and T2 anxiety scores was not significant, $F(1,100) = 2.93$, $p = .09$.

To test the third hypothesis, the first ANCOVA conducted included the independent variable of depression group status with three levels. The dependent variable was T2 life satisfaction, and the covariates were T1 life satisfaction and social desirability. Homogeneity-of-slopes for the covariate of social desirability, $F(2,95) = 1.04$, $p = .36$, and for the covariate of T1 life satisfaction were assumed, $F(2,95) = .83$, $p = .44$, and homogeneity of variance, $F(2,101) = 1.47$, $p = .24$ is assumed. The ANCOVA was not significant nor trending towards significance, $F(2,99) = .47$, $p = .62$, suggesting that there is no relationship between depression group status and T2 satisfaction with life, when controlling for social desirability and T1 life satisfaction. The relationship between T1 social desirability and T2 life satisfaction was not significant, $F(1,99) = .54$, $p = .47$. However, the relationship between T1 life satisfaction and T2 life satisfaction within depression groups was significant, $F(1,99) = 106.59$, $p < .001$, partial $\eta^2 = .52$.

A second ANCOVA was conducted to test the third hypothesis with an independent variable of anxiety group status (3 levels). The dependent variable was T2 life satisfaction, and the covariates were T1 life satisfaction and social desirability. Homogeneity of variance, $F(2, 101) = .11$, $p = .90$ and homogeneity-of-slopes for the covariate of social desirability, $F(2,95) = .67$, $p = .52$ was assumed, as well as for the covariate of T1 life satisfaction, $F(2,95) = .05$, $p = .95$. The ANCOVA was not significant, but it was trending towards significance, $F(2,99) = 2.90$, $p = .06$, partial $\eta^2 = .06$, suggesting that had we obtained the minimum sample size, there is a possibility that the relationship between anxiety group status and T2 life satisfaction, when controlling for social desirability and T1 life satisfaction may have been significant. In fact, using the G*Power 3 software (Faul et al., 2009), a minimum of 155 participants would have

been needed to achieve a statistically significant effect given the effect size (partial $\eta^2 = .06$) with a power of .80 and α of .05. The relationship between T1 social desirability and T2 life satisfaction was not significant, $F(1,99) = 1.67$, $p = .20$. The relationship between life satisfaction at T1 and satisfaction with life at T2 was significant, $F(1,99) = 116.43$, $p < .01$, partial $\eta^2 = .54$.

To test the fourth hypothesis, the first ANCOVA conducted included the independent variable of depression group status with three levels. The dependent variable was T2 positive affect, and the covariates were T1 positive affect and social desirability. Homogeneity-of-slopes for social desirability, $F(2,95) = .25$, $p = .78$, and for T1 positive affect, $F(2,95) = .78$, $p = .46$ were assumed, as well as homogeneity of variance, $F(2,102) = .04$, $p = .10$. The ANCOVA was not significant nor trending towards significance, $F(2,99) = .44$, $p = .65$, suggesting that there is no relationship between depression group status and T2 positive affect, when controlling for social desirability and T1 positive affect. The relationship between social desirability and T2 positive affect was not significant, $F(1,99) = .19$, p = .67. The relationship between positive affect at T2 and positive affect at T1 was significant, $F(1,99) = 58.25$, $p < .01$, partial $\eta^2 = .37$.

A second ANCOVA was conducted to test hypothesis four. Anxiety group status with three levels was the independent variable. The dependent variable was T2 positive affect, and the covariates were T1 positive affect and social desirability. Homogeneity-of-slopes for social desirability, $F(2,95) = 1.43$, $p = .24$, and for T1 positive affect, $F(2,95) = .53$, $p = .60$ were assumed, as well as homogeneity of variance, $F(2,101) = .73$, $p = .49$. The ANCOVA was not significant nor trending towards significance, $F(2,99) = .65$, $p = .52$, suggesting that there is no relationship between anxiety group status and T2 positive affect, when controlling for social desirability and T1 positive affect. The relationship between social desirability and T2 positive

affect within groups was not significant, $F(1,99) = .03$, $p = .87$. The relationship between positive affect at T2 and positive affect at T1 was significant, $F(1,99) = 59.07$, $p < .001$, partial $\eta^2 = .37$.

An ANCOVA with depression group status as the independent variable was conducted to test hypothesis five. The dependent variable was T2 negative affect, and the covariates were T1 negative affect and social desirability. Homogeneity-of-slopes for social desirability, $F(2,95) = .18$, $p = .84$, and for T1 negative affect, $F(2,95) = .20$, $p = .82$ were assumed, as well as homogeneity of variance, $F(2,101) = 1.81$, $p = .17$. The ANCOVA was not significant nor trending towards significance, $F(2,99) = .53$, $p = .60$, suggesting that there is no relationship between depression group status and T2 negative affect, when controlling for social desirability and T1 negative affect. The relationship between social desirability and T2 negative affect was not significant, $F(1,99) = .06$, $p = .80$. The relationship between negative affect at T2 and negative affect at T1 was significant, $F(1,99) = 55.91$, $p < .001$, partial $\eta^2 = .36$.

A second ANCOVA was conducted to test hypothesis five. Anxiety group status with three levels was the independent variable. The dependent variable was T2 negative affect, and the covariates were T1 negative affect and social desirability. Homogeneity-of-slopes for social desirability, $F(2,95) = .41$, $p = .66$, and for T1 negative affect, $F(2,95) = .51$, $p = .60$ were assumed, as well as homogeneity of variance, $F(2,101) = .86$, $p = .43$. The ANCOVA was not significant nor trending towards significance, $F(2,99) = .60$, $p = .55$, suggesting that there is no relationship between anxiety group status and T2 negative affect, when controlling for social desirability and T1 negative affect. The relationship between social desirability and T2 negative affect was not significant, $F(1,99) = .01$, $p = .91$. The relationship between negative affect at T2 and negative affect at T1 was significant, $F(1,99) = 52.85$, $p < .001$, partial $\eta^2 = .35$.

An ANCOVA with depression group status as the independent variable was conducted to test hypothesis six. The dependent variable was T2 health promoting behaviors, and the covariates were T1 health promoting behaviors and social desirability. Homogeneity-of-slopes for social desirability, $F(2,95) = .08$, $p = .92$, and for T1 health promoting behaviors, $F(2,95) = .51$, $p = .60$, is assumed; however, homogeneity of variance was violated, $F(2,101) = 3.23$, $p = .04$, suggesting that with a limited sample there was significant variance in scores across participants. An ANCOVA and pairwise equations were conducted with the bootstrapping method to take into account this heterogeneity. The ANCOVA was not significant nor trending towards significance, $F(2,99) = 1.68$, $p = .19$, suggesting that there is no relationship between depression group status and T2 health promoting behaviors, when controlling for social desirability and T1 health promoting behaviors. The relationship between social desirability and T2 negative affect was not significant, $F(1,99) = .10$, $p = .76$. The relationship between health promoting behaviors at T2 and health promoting behaviors at T1 was significant, $F(1,99) = 137.35$, $p < .001$, partial $\eta^2 = .58$.

An ANCOVA with anxiety group status as the independent variable was conducted to test hypothesis six. The dependent variable was T2 health promoting behaviors, and the covariates were T1 health promoting behaviors and social desirability. Homogeneity-of-slopes for social desirability, $F(2,95) = .72$, $p = .50$, and for T1 health promoting behaviors, $F(2,95) = .32$, $p = .73$, is assumed; however, homogeneity of variance in this limited sample was violated, $F(2,101) = 3.10$, $p = .05$. Thus, an ANCOVA and pairwise equations were conducted with the bootstrapping method to take into account this heterogeneity. The ANCOVA was not significant but trending towards significance, $F(2,99) = 2.50$, $p = .09$, partial $\eta^2 = .05$, suggesting that if this were a larger sample, then there could be a possible relationship between anxiety group status

and T2 health promoting behaviors, when controlling for social desirability and T1 health promoting behaviors. In fact, using the G*Power 3 software (Faul et al., 2009), a minimum of 187 participants would have been needed to achieve statistical significance given the effect size (partial $\eta^2 = .05$) with a power of .80 and α of .05. The relationship between social desirability and T2 health promoting behaviors at T2 was not significant, $F(1,99) = .65$, $p = .42$. The relationship between health promoting behaviors at T2 and health promoting behaviors at T1 was significant, $F(1,99) = 135.75$, $p < .001$, partial $\eta^2 = .58$.

Discussion

This study set out to examine the relationship between first year college students' mental health group status (i.e., unrealistic optimists, realists, and unrealistic pessimists) at the beginning of the first semester of college (T1) and psychological wellbeing and mental health promoting/prevention behaviors at the end of their first semester of college (T2), when controlling for social desirability. Despite encountering difficulties with retaining the participants needed for longitudinal analyses, the study resulted in three important conclusions: our participants demonstrated high social desirability, our participants were more likely than participants in previous studies to by unrealistically pessimistic, and participants who were unrealistic optimists fared worse than their realistic and unrealistically pessimistic counterparts. Each of these findings will be discussed in turn.

First, social desirability was discovered to play a prominent role in this cohort. Specifically, the primary analyses indicated that in both anxiety and depression groups the relationship between social desirability and the dependent variables (i.e., life satisfaction, negative affect, positive affect, and health promoting behaviors) at T1 were all significant. These findings suggest that social desirability significantly affects people's reporting of current

psychological wellness and health promoting behaviors (the dependent variables). Interestingly, there were fewer significant effects of social desirability on the dependent variables at T2. Thus, social desirability from a previous time (i.e., three months prior) did not impact ratings of psychological wellbeing and health promoting behaviors at a later time.

It is difficult to find means and standard deviations reported in prior studies using the M-C SDS Short Form. Additionally, some researchers score the scale 0-13 while others score it 13-26, creating confusion when comparing means across studies. As a result, it is difficult to compare the current sample's social desirability to other studies. However, higher scores indicate a more socially desirable response pattern, and the average of 19.98 (out of 26) in the current study is on the higher end of the scale. Thus, a major takeaway from this study is that this sample on average had high social desirability despite the anonymity of the surveys. A possible explanation for such high social desirability in this cohort is that social desirability was measured in the first month of their first semester of college when the desire for impression management is likely to be high. In addition, it is possible that the large influence of social media in the past few years has made impression management particularly robust in this cohort.

A second major finding from this study was the unexpectedly large presence of unrealistic pessimists in this cohort. Unrealistic pessimism is when individuals believe that their likelihood of experiencing a negative event is higher compared to others (Dolinski et al., 1986). This was an unexpected finding since this study was based on Dillard et al. (2009), who, after finding a small number of unrealistic pessimists, combined the unrealistic pessimists with realists creating an overarching realist group. Thus, Dillard et al. (2009) only examined two groups: unrealistic optimists and realists. In following Dillard et al. (2009), I expected to only examine

outcomes among two groups as well; however, with the large presence of unrealistic pessimists in this cohort, outcomes among three groups were examined instead.

Regarding demographics, the current sample was quite similar to that in Dillard et al. (2009). For example, Dillard et al.'s (2009) sample participants ranged from 17 to 21 years old (M = 18.31; SD = .51), attended a liberal arts college, and the majority were female (63%). Due to sample similarities, demographics are unlikely the cause of any of the differences in the current findings, including the unexpected presence of unrealistic pessimists.

One possible influence on the large number of unrealistic pessimists in this cohort is that the current sample participants took the survey post COVID-19. During the COVID-19 pandemic, many people became acutely ill, experienced lingering effects of illness, and lost friends and family members to COVID-19. In addition, students had their education interrupted and moved online, and when they returned to the classroom experienced social distancing restrictions and/or hybrid learning. A number of studies (Kecojevic et al., 2020; Reyes-Portillo et al., 2022; Rosario-Moore et al., 2023; Son et al., 2020) have found that over the course of the pandemic, university students reported a number of increased academic and health issues: anxiety, depression, social isolation, and academic performance concerns. Thus, it is plausible that recent experiences of the pandemic could have resulted in the current sample of first year students being more pessimistic than that of Dillard et al. (2009), creating a larger unrealistic pessimism group than expected.

A second possible influence on the large number of unrealistic pessimists in this cohort is the younger generation's direct and indirect exposure to violence. In particular, this generation has come to understand the threat of gun violence in public spaces, including in educational institutions, as normative and increasingly commonplace (Rajan et al., 2018). Steadily increasing

since 1974, the number of gun deaths in the United States in 2021 alone was 45,830 (Gramlich, 2022). Due to the high amount of gun violence, first year students in this cohort have grown up practicing active shooter drills in school and have witnessed the very real effects of such active shooter threats: Columbine High School shooting (1999), Virginia Tech shooting (2007), Sandy Hook Elementary School shooting (2012), Stoneman Douglas High School shooting (2018), etc. In addition to gun violence, youth today experience various forms of additional victimization related to gender identity, sexuality, race/ethnicity, immigration status, etc. (Johns et al., 2020; Pottie et al., 2016; Webb et al., 2020). Thus, this cohort of students has grown up in times of uncertainty and questionable safety, which may have contributed to increased pessimism and, as such, a larger unrealistic pessimism group in this study.

Lastly, another possible influence that may have increased the unrealistic pessimism in this cohort is the socio-political polarization in our society driven by traditional media outlets and social media platforms. Socio-political polarization is the shifting of political views towards extremes, which is commonly tied to social division among groups and often exacerbates pre-existing systemic inequalities in opportunity and privilege (e.g., us vs. them mentality; Bail et al., 2018; Romero- Rodríguez et al., 2023; Wilson et al., 2020). Research into the phenomenon has revealed that such polarization in the United States began to climb during Barack Obama's presidential years and has only grown since Donald Trump's term as president (Kubin & van Sikorsi, 2021; Pew Research Center, 2014; Pew Research Center, 2017). Such polarization may be aided by traditional media outlets becoming more partisan in nature, who previously trended towards neutrality and away from sensationalism. Furthermore, with the rise of social media, information is increasingly accessible and unfiltered in both positive (e.g., factual) and negative (e.g., 'fake news') ways (Romero-Rodríguez et al., 2023; Wilson et al., 2020) Consequences of

socio-political polarization have included implementation of divisive legislation (e.g., overturning of the Roe vs. Wade United States Supreme Court precedent, signing of the Parental Rights in Education 'Don't Say Gay' bill in Florida), increased disillusionment, and rising animosity between groups of people (Kubin & van Sikorski, 2018; Loader et al., 2014; Romero-Rodríguez et al., 2023; Wilson et al., 2020). First year students in this study grew up alongside social media and experienced this socio-political divide during much of their formative years, which may have negatively impacted their world outlook, potentially resulting in more unrealistic pessimism in this cohort than prior studies.

In examining the literature on both unrealistic optimism and unrealistic pessimism, it appears that more research has been conducted on unrealistic optimism than unrealistic pessimism (Waters et al., 2011). Within the existing unrealistic pessimism literature , there seems to be limited research on the associations between unrealistic pessimism and health related research (Rose et al., 2008; Waters et al., 2011). Of the available studies on unrealistic optimism and health, some have found that people with unrealistically pessimistic risk perceptions were likely already vulnerable to negative health outcomes (i.e., lower education, lower income, currently smoking, etc.; Waters et al., 2011) compared to unrealistic optimists. Depending on influencing factors, some studies have also found that unrealistic pessimists, similar to unrealistic optimists, have been shown to engage in more unhealthy coping strategies and non-health promoting behaviors (Lerman et al., 1993), as well as more health promoting behaviors (Brain et al., 1999). Thus, like unrealistic optimists, there may be moderating or mediating factors that are important in understanding the relationship between unrealistic pessimism and positive and negative health outcomes.

As research on health and unrealistic pessimism is limited, the research on *mental health* consequences of unrealistic pessimism is also scarce. One specific article did however compare the mental health of unrealistic optimists, realists, and unrealistic pessimists over the course of 18 years in Britain (De Meza & Dawson, 2020). To determine group status, these researchers measured the difference between financial expectations and current financial status over the years. They found that unrealistic pessimists experienced a 21.8% greater reduction in well-being over the years compared to realists. Unrealistic optimists experienced a 13.5% greater reduction in well-being over the years compared to realists. Furthermore, unrealistic pessimists had a 37.2% higher level of psychological distress compared to realists and unrealistic optimists had a 11.8% higher level compared to realists. Overall, this article found that over the long-term, realists had the best mental health outcomes, followed by unrealistic optimists, and then unrealistic pessimists. Thus, there is some potential that unrealistic optimists and realists have better mental health outcomes than pessimists.

In contrast to De Meza and Dawson (2020), in the current study, unrealistic pessimists in the depression group did not significantly differ from realists and unrealistic optimists in their reported levels of positive affect. In regard to negative affect in depression groups, the pattern of means were also dissimilar to De Meza and Dawson (2020). For instance, the interaction between depression group status and negative affect in this study was significantly affected by social desirability: when participants had low social desirability, realists showed significantly more average negative affect than unrealistic pessimists. Unlike De Meza and Dawson (2020) again, unrealistic pessimists in the anxiety group had similar negative affect compared to realists. and unrealistic optimists in the anxiety group fared significantly worse in terms of negative affect compared to both realists and unrealistic pessimists. Thus, unlike the pattern found in De Meza

and Dawson (2020), the current study found that unrealistic pessimists either had similar mental health outcomes to realists and unrealistic optimists or better mental health outcomes than realists and unrealistic optimists.

This lead to the third major takeaway from this study: unlike De Meza and Dawson (2020), but as I predicted, unrealistic optimists had worse mental health outcomes than both realists and unrealistic pessimists. Specifically, unrealistic optimists fared worse than realists and unrealistic pessimists in two different ways. First, as predicted, unrealistic optimists about their depression risk were trending towards significantly less positive affect on average compared to realists. One reason unrealistic optimists may have less positive affect is that they are ignoring real mental health issues due to their beliefs that they are unlikely to have depression. Thus, they may be less likely to engage in preventative and proactive measures that increase positive affect compared to individuals who are more realistic about their mental health.

Second, as predicted, those who were unrealistically optimistic about their anxiety risk had more negative affect than realists. As mentioned previously, they also fared worse than individuals who were considered unrealistically pessimistic. A potential mediating factor could be at play, such as controllability, as those who have unrealistically high perceptions of getting anxiety (i.e., unrealistic pessimists) may be engaging in proactive measures to reduce any feelings of negative affect. Furthermore, unrealistic optimists believe they are less likely to experience anxiety symptoms and therefore may not know how to handle stress adequately resulting in more negative affect. Those who are realistic about their chances of experiencing anxiety may be more likely to have developed coping strategies that help them to handle the negative affect.

In addition to these three primary takeaways, a number of additional themes were observed in the data. One being that the primary analyses found a complex relationship between depression risk groups, social desirability, and negative affect. Specifically, negative affect ratings by realists in the depression group are significantly impacted by social desirability: the less likely they are to care about social desirability the more likely they are to report negative affect. Furthermore, while their level of reported negative affect is similar to the other groups at moderate and high levels of social desirability, it is significantly higher than the unrealistic pessimists at low levels of social desirability. These findings suggest that when realists no longer care about social desirability and are therefore being honest, then they may be more able to accurately assess the state of the world and report higher negative affect than unrealistic pessimists. In addition, despite low social desirability, unrealistic pessimists may have reported less negative affect than realists in spite of and due to their proclivity to being negative. For instance, the unrealistic pessimists may have become more habituated to negative affect than the realists, leading to less emotional awareness and less reported negative affect than expected. Another possible reasoning for these findings is that the negative affect scale in the PANAS simply did not function as expected for the unrealistic pessimists.

Another theme is that the primary analyses did not show any relationship between group status (unrealistic pessimists, realists, and unrealistic optimists) and life satisfaction and health promoting behaviors at T1. However, exploratory analyses suggest there could be a relationship between anxiety group status at T1 and life satisfaction and engagement in health promoting behaviors in T2. These dependent variables were the only dependent variables trending towards significance in the exploratory analyses. A possible reason for the non-significant findings at T1 versus the trending towards significance results at T2 is that these dependent variables are more

trait-like than state-like. Thus, these variables take a longer time to be affected, supporting my desire to engage in a longitudinal study to examine the effects of group status at T1 on variables that are trait-like at T2. Dependent variables like negative and positive affect are more state-like and thus influenced by what is occurring in a person's life at the moment. Since group status was created at T1 and not T2, it makes sense that group status would be directly related to T1 affect and not T2 affect, given the state-like quality of affect.

Lastly, exploratory analyses indicated that the dependent variables at T1 had a significant relationship with the dependent variables at T2. This is to be expected as people are likely to have similar ratings across timepoints. Overall, there were a number of significant results in the primary analyses and some trending results in the exploratory analyses, resulting in the three biggest takeaways from the study: this cohort has high social desirability, this cohort has more unrealistic pessimists than previous studies, and unrealistic optimists fared worse than realists and unrealistic pessimists in terms of their mental health outcomes.

Implications

This study has implications for applied research, in that applied studies could examine the benefits of identifying first year college students' optimism status. In addition, despite the limits of this study (i.e., not meeting necessary sample sizes), this research filled a number of gaps in the unrealistic optimism literature (i.e., examining first years' unrealistic optimism about mental health specifically and attempting a longitudinal study design) and offered interesting insights about optimism group statuses that can inform future experimental studies, as well as popular perception. For example, popular psychology (based on positive psychology) and health psychology often suggest the benefits of improving optimism; however, more optimism may not always be advantageous. Optimism is likely more nuanced than commonly perceived, as this

study suggests that when optimism is unrealistic it is associated with negative mental health outcomes. Thus, more care should be taken when making efforts to increase optimism, such that it is clear that one should increase their realistic (rather than unrealistic) optimism.

Limitations and Future Directions

The primary limitations in this study were the limited total sample sizes for both the T1 and T2 datasets due to the unexpected addition of a third group and difficulty with retaining participants across their first semester of college. As a result, minimum group sample sizes were not met in the cross-sectional dataset or the longitudinal dataset. Thus, it would be helpful in the future to recruit a larger sample. In addition, it would be useful for future studies to recruit a more diverse sample in respect to gender identity, race/ethnicity, and sexual orientation and to examine whether these demographics moderate the relationship between optimism and outcomes. Furthermore, since the dataset for the primary analyses was cross-sectional, the study could not determine causality or the consequences of T1 group status on the dependent variables; only associations could be determined. While efforts were made to assure only valid responses were considered (i.e., examining the data for duration of response completion), other methods of addressing data quality, such as validity questions throughout the survey, would be helpful in future research. Lastly, study results indicate that there may have been other mediators or moderators impacting the results, such as controllability and current coping strategies. Thus, it may be helpful to include a perceived self-efficacy scale and a measure that examines coping strategies in future studies of unrealistic optimism and mental health.

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Table 1

Demographic Characteristics of the Overall T1 Sample of First Year Students

Demographic Characteristics	Participants (N = 187)	Frequency (%)
Age	n = 179	
18	151	84.4
19	25	14.0
21	1	.6
26	1	.6
28	1	.6
Assigned sex at birth	n = 179	
Male	47	26.3
Female	130	72.6
Prefer not to respond	2	1.1
Gender Identity	n = 179	
Male	48	26.8
Female	124	69.3
Gender Non-Conforming	3	1.7
Write in	3 [a]	1.7
Prefer not to respond	1	.6

Note. The population/total sample included 187 participants; however, 8-9 individual responses were missing from demographic data as indicated by the sample size (n) for each demographic characteristic.

[a] "Write in" responses for 3 individuals: gender queer, no response.

Table 2

Demographic Characteristics of the Overall T1 Sample of First Year Students Cont.

Demographic Characteristics	Participants	Frequency (%)
Sexual Orientation	*n* = 178	
Straight	134	75.3
Gay or Lesbian	6	3.4
Bisexual	26	14.6
Write in	9 [b]	5.1
Prefer not to respond	3	1.7
Race/Ethnicity	*n* = 179	
Asian/Asian American	5	2.8
Black/African American	13	7.3
Hispanic American or Latino/a	7	3.9
Non-Hispanic White/Caucasian	146	81.6
Middle Eastern or North African	3	1.7
Multiracial/Multiethnic	2	1.1
Prefer not to respond	1	.6
Write in	2 [c]	1.1

Note. The population/total sample included 187 participants; however, 8-9 individual responses were missing from demographic data as indicated by the sample size (*n*) for each demographic characteristic.

[b] "Write in" responses for 9 individuals: queer, pansexual, demiromantic, asexual, unlabeled, still figuring out, and pansexual/bisexual/queer/gay. [c] "Write in" responses for 2 individuals = no response.

Table 3

Demographic Characteristics of the Overall T1 Sample of First Year Students Cont.

Demographic Characteristics	Participants	Frequency (%)
Parent Highest Educational Attainment	$n = 179$ [d]	
Less than a high school diploma	2	1.1
High school degree or equivalent	21	11.7
Bachelor's degree	69	38.5
Master's degree	61	34.1
Doctorate degree	22	12.3
Write in	4 [e]	2.2

Note. The population/total sample included 187 participants; however, 8-9 individual responses were missing from demographic data as indicated by the sample size (*n*) for each demographic characteristic.

[d] This category refers to parent and legal guardians' highest level of educational attainment. [e] "Write in" responses for 4 individuals = Law degree, Associate's degree.

Table 4

Categorization Scheme for Identifying Anxiety and Depression Group Status at T1

Risk Perception	Below Group Average Actual Risk	Average Actual Risk	Above Group Average Actual Risk
Below Average	Realist	Unrealistic Optimist	Unrealistic Optimist
Average	Unrealistic Pessimist	Realist	Unrealistic Optimist
Above Average	Unrealistic Pessimist	Unrealistic Pessimist	Realist

Table 5

Descriptive Statistics for Dependent Variables and Covariates (CV)

Study Variables	*M*	*SD*	*Skewedness*	*Kurtosis*
Social Desirability (CV)	19.98	2.84	-.21	-.53
Anxiety Symptoms	7.72	5.29	.57	-.31
Depression Symptoms	7.27	5.49	1.09	1.33
Satisfaction with Life	23.00	6.42	-.45	-.54
Positive Affect	32.82	6.90	.12	-.22
Negative Affect	24.10	7.60	.46	.25
Health Promoting Behaviors	132.06	22.46	.42	.09

Note. The overall sample included 187 participants; however, for health promoting behaviors 8 responses were missing making the sample 179 participants for this dependent variable. *M* = mean; *SD* = standard deviation.

Table 6

Hypothesis 3 Analysis of Covariance: T1 Group Status affects T1 Life Satisfaction, Controlling for Social Desirability

Variables (IV and CV)	*F*	*df*	*p*	partial η^2
Depression Group Status (IV)	1.44	2,183	.24	.02
Social Desirability (CV)	10.76	1,183	.001*	.06
Anxiety Group Status (IV)	.77	2, 183	.46	.01
Social Desirability (CV)	12.82	1,183	< .001**	.07

Note. Scores may not be exact due to rounding. *F* = *F* ratio; *df* = numerator degrees of freedom, denominator degrees of freedom; *p* = probability test of significance; partial η^2 = effect size.

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. $^{\dagger}p < .10$, trending towards significance.

Table 7

Hypothesis 4 Analysis of Covariance: T1 Group Status affects T1 Positive Affect, Controlling for Social Desirability

Variables (IV and CV)	*F*	*df*	*p*	partial η^2
Depression Group Status (IV)	3.20	2,183	.04*	.03
Social Desirability (CV)	7.97	1,183	.005**	.04
Anxiety Group Status (IV)	.42	2,183	.66	.01
Social Desirability (CV)	10.75	1,183	.001***	.06

Note. Scores may not be exact due to rounding. *F* = *F* ratio; *df* = numerator degrees of freedom, denominator degrees of freedom; *p* = probability test of significance; partial η^2 = effect size.

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. $^{\dagger}p < .10$, trending towards significance.

Table 8

Estimated Marginal Means for Hypothesis 4, Depression Group Status

Depression Group Levels	*M*	*SE*
Unrealistic Pessimists	31.75 [a]	1.08
Realists	33.85 [a]	.64
Unrealistic Optimists	30.99 [a]	1.07

Note. Scores may not be exact due to rounding. *M* = mean; *SE* = standard error.

[a] Social desirability (CV) in this model is evaluated at *M* = 19.98.

Table 9

Pairwise Comparisons for Hypothesis 4, Depression Group Status

Depression Group Level	Depression Group Level	Mean Difference	p [a]
Unrealistic Pessimists	Realists	2.01	.27
Unrealistic Pessimists	Unrealistic Optimists	.76	.94
Unrealistic Optimists	Realists	2.86	.07[†]

Note. Scores may not be exact due to rounding. p = probability test of significance.

[a] Adjustment for multiple comparisons: Sidak.

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. [†]$p < .10$, trending towards significance.

Table 10

Estimated Marginal Means for Hypothesis 5, Depression Group Status

Depression Group Levels	*M*	*SE*
Unrealistic Pessimists	23.98 [a]	1.43
Realists	29.02 [a]	1.01
Unrealistic Optimists	25.71 [a]	1.42

Note. Scores may not be exact due to rounding. *M* = mean; *SE* = standard error.

[a] Social desirability (CV) in this model is evaluated at the low level (*M – SD)* = 17.14.

Table 11

Pairwise Comparisons for Hypothesis 5, Depression Group Status at a Low Level on the Covariate

Depression Group Level	Depression Group Level	Mean Difference	p [a]
Unrealistic Pessimists	Realists	5.04	.014*
Unrealistic Pessimists	Unrealistic Optimists	1.73	.78
Unrealistic Optimists	Realists	3.31	.20

Note. Scores may not be exact due to rounding. p = probability test of significance.

[a] Adjustment for multiple comparisons: Sidak.

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. †$p < .10$, trending towards significance.

Table 12

Hypothesis 5 Analysis of Covariance: T1 Anxiety Group Status affects T1 Negative Affect, Controlling for Social Desirability

Variables (IV and CV)	*F*	*df*	*p*	partial η^2
Anxiety Group Status (IV)	5.33	2,183	.006**	.06
Social Desirability (CV)	32.87	1,183	< .001***	.15

Note. Scores may not be exact due to rounding. *F* = *F* ratio; *df* = numerator degrees of freedom, denominator degrees of freedom; *p* = probability test of significance; partial η^2 = effect size. *$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. $^{\dagger}p < .10$, trending towards significance.

Table 13

Estimated Marginal Means for Hypothesis 5, Anxiety Group Status

Anxiety Group Levels	*M*	*SE*
Unrealistic Pessimists	22.76 [a]	1.02
Realists	23.54 [a]	.68
Unrealistic Optimists	27.42 [a]	1.16

Note. Scores may not be exact due to rounding. *M* = mean; *SE* = standard error.

[a] Social desirability (CV) in this model is evaluated at *M* = 19.98.

Table 14

Pairwise Comparisons for Hypothesis 5, Anxiety Group Status

Anxiety Group Level	Anxiety Group Level	Mean Difference	*p* [a]
Unrealistic Pessimists	Realists	.78	.89
Unrealistic Pessimists	Unrealistic Optimists	4.66	.009**
Unrealistic Optimists	Realists	3.88	.013*

Note. Scores may not be exact due to rounding. *p* = probability test of significance.

[a] Adjustment for multiple comparisons: Sidak.

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. †$p < .10$, trending towards significance.

Table 15

Hypothesis 6 Analysis of Covariance: T1 Group Status affects T1 Health Promoting Behaviors, Controlling for Social Desirability

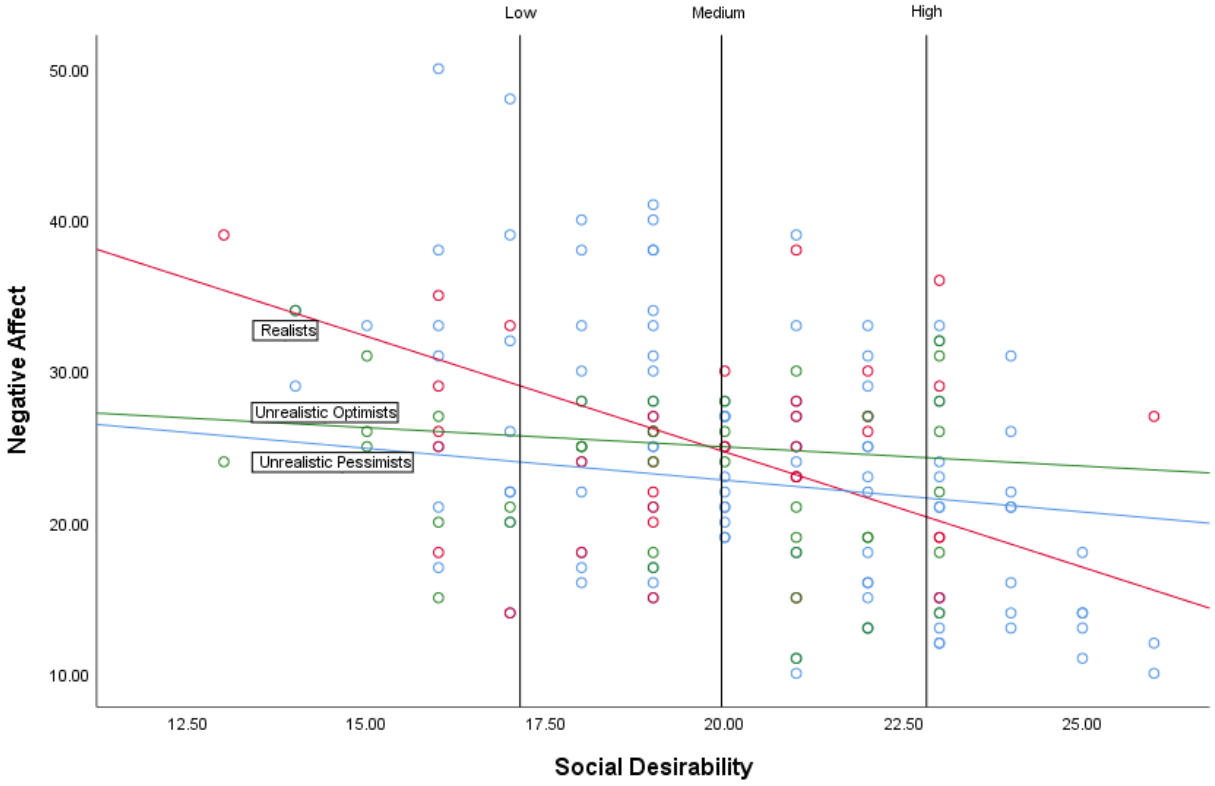
Variables (IV and CV)	*F*	*df*	*p*	partial η^2
Depression Group Status (IV)	.15	2,175	.86	.01
Social Desirability (CV)	14.02	1,175	< .001***	.07
Anxiety Group Status (IV)	1.67	2,175	.19	.02
Social Desirability (CV)	15.80	1,175	< .001***	.08

Note. Scores may not be exact due to rounding. *F* = *F* ratio; *df* = numerator degrees of freedom, denominator degrees of freedom; *p* = probability test of significance; partial η^2 = effect size.

*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$. $^{\dagger}p < .10$, trending towards significance.

Figure 1

Differences Between Depression Groups for Three Levels of the Covariate (Social Desirability) as a Function of Negative Affect



Note. The realist slope is steeper than slopes for unrealistic pessimists and realists, indicating heterogeneity of slopes. When social desirability is low, the depression groups differed significantly in their reports of negative affect. The adjusted means for the realistic group differed significantly from the unrealistic pessimism group, $p = .014$, meaning that when social desirability is low, realists had more reports of negative affect than unrealistic pessimists.

Appendix A

Demographics Questionnaire

This is based off of Xavier University Institutional Review Board's best practices.

1. Assigned sex at birth:
- a. Male
- b. Female
- c. Prefer not to respond

2. Current gender identity:
- a. Male
- b. Female
- c. Transgender male to female
- d. Transgender female to male
- e. Gender non-conforming
- f. Do not identify as female, male, or transgender
- g. Write in:
- h. Prefer not to respond

3. **Sexual orientation:**
- a. Straight
- b. Gay or lesbian
- c. Bisexual
- d. Write in:
- e. Prefer not to respond

4. Race/Ethnicity (please circle/mark all that apply):
- a. Native American/Alaskan Native
- b. Asian/Asian American
- c. Black/African American
- d. Hawaiian/Pacific Islander
- e. Hispanic American or Latino/a
- f. Non-Hispanic White/Caucasian
- g. Middle Eastern or North African
- h. Multiracial/Multiethnic
- i. Write in: _____
- j. Prefer not to respond

5. How old are you? (in years) _____

6. What is your class standing?

a. First year
b. Second year
c. Third year
d. Fourth year

7. What is your parent/legal guardian's highest educational attainment? (Choose the guardian with the highest level of education)

a. Less than a high school diploma

b. High school degree or equivalent

c. Bachelor's degree (e.g., B.A., B.S.)

d. Master's degree (e.g., M.S., M.A., M.Ed.)

e. Doctorate degree (e.g., Ph.D., Psy.D.)

f. Write in:_____

.

Appendix B

Patient Health Questionnaire – 9 (PHQ-9)

The PHQ-9 is not reproduced in this document. This measure is available through Pfizer at https://www.phqscreeners.com/select-screener

Appendix C

Generalized Anxiety Disorder – 7 (GAD-7)

The GAD-7 is not reproduced in this document. This measure is available through Pfizer at https://www.phqscreeners.com/select-screener

Appendix D

Satisfaction With Life Scale (SWLS)

The SWLS is not reproduced in this document. This measure is available through the publisher's website, http://labs.psychology.illinois.edu/~ediener/SWLS.html

Appendix E

Positive and Negative Affect Schedule (PANAS)

The PANAS is not reproduced in this document. This measure can be found in the following article: Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063-1070. https://doi.org/10.1037/0022-3514.54.6.1063

Appendix F

Marlowe-Crowne Social Desirability Scale Short Form

The M-C SDS Short Form is not reproduced in this document. This measure is available as a supplementary resource to the original Reynolds (1982) publication. This measure can be found on https://www.researchgate.net/publication/280938637_Copy_of_cmsds_Short_Form_and_scoring_instructions

Appendix G

Health Promoting Life-Style Profile – Second Edition (HPLP-II)

Permission to use this scale for the current study was obtained from Susan Noble Walker, College of Nursing, University of Nebraska Medical Center, Omaha, NE 68198-5330. The HPLP-II is not reproduced in this document. This measure is available through the publisher's website, https://www.unmc.edu/nursing/faculty/health-promoting-lifestyle-profile-II.html

Additional Health Promoting Questions:

Have you engaged in counseling or psychological services this past semester?

Yes No

Have you engaged in previous counseling or psychological services prior to your first year of university?

Yes No

Appendix H

Unrealistic Optimism Risk Assessment

For each of the following statements and/or questions, please circle what you feel is most appropriate in describing you.

1. How do you feel your chances of having a diagnosable mental health condition in the next six months compare to those of other university students of your age and sex?

1	2	3	4	5	6	7
Much Below Average	Below Average	Slightly Below Average	Average	Slightly Above Average	Above Average	Much Above Average

2. How do you feel your own chances of having symptoms of anxiety in the next six months compare to those of other university students of your age and sex?

1	2	3	4	5	6	7
Much Below Average	Below Average	Slightly Below Average	Average	Slightly Above Average	Above Average	Much Above Average

3. How do you feel your own chances of having symptoms of depression in the next six months compare to those of other university students of your age and sex?

1	2	3	4	5	6	7
Much Below Average	Below Average	Slightly Below Average	Average	Slightly Above Average	Above Average	Much Above Average

Appendix I

Xavier University Institutional Review Board (IRB) Approval Letter

August 23, 2021

Taylor Pitcher
[redacted]

Re: Protocol #21-005, *Unrealistic Optimism and Psychological Wellbeing in First Year College Students*

Dear Ms. Pitcher:

The IRB has reviewed the materials regarding your study, referenced above, and has determined that it meets the criteria for the Exempt from Review category under Federal Regulation 45CFR46. Your protocol is approved as exempt research, and therefore requires no further oversight by the IRB. We appreciate your thorough treatment of the issues raised and your timely response.

If you wish to modify your study, including the addition of data collection sites, it will be necessary to obtain IRB approval prior to implementing the modification. If any adverse events occur, please notify the IRB immediately.

Please contact our office if you have any questions. We wish you success with your project!

Sincerely,

Tammy L. Sonnentag, PhD

Tammy L. Sonnentag, PhD.
Chair, Institutional Review Board
Xavier University

TLS/sb

Appendix J

Xavier University IRB Modification Approval Letter 1

August 30, 2021

Taylor Pitcher
[redacted]

Dear Ms. Pitcher:

Re: Protocol #21-005, *Unrealistic Optimism and Psychological Wellbeing in First Year College Students*.

Dear Ms. Pitcher:

The IRB has reviewed the request to modify your study, referenced above. We understand that you will be recruiting participants through additional pathways. We are able to continue to approve your study based on the information you provided. Therefore, your above-referenced study, as modified, continues to be approved in the Exempt category under Federal Guidelines 45CFR46.

Please note that if you wish to further modify your study, it will be necessary to obtain IRB approval prior to implementing the modification. If any adverse events occur, please notify the IRB immediately.

We truly appreciate your efforts and attention to compliance within the spirit of human subject's protection. We wish you great success with your research.

Sincerely,

Tammy L. Sonnentag, PhD

Tammy L. Sonnentag, PhD.
Chair, Institutional Review Board
Xavier University

TLS/sb

Appendix K

Xavier University IRB Modification Approval Letter 2

November 10, 2021

Taylor Pitcher
[redacted]

Re: Protocol #21-005, *Unrealistic Optimism and Psychological Wellbeing in First Year College Students*

Dear Ms. Pitcher:

The IRB has reviewed the request to modify your study, referenced above. We understand that due to a Sona error you will be contacting participants to provide them with their credit. We are able to continue to approve your study based on the information you provided. Therefore, your above-referenced study, as modified, continues to be approved in the Exempt category under Federal Guidelines 45CFR46.

Please note that if you wish to further modify your study, it will be necessary to obtain IRB approval prior to implementing the modification. If any adverse events occur, please notify the IRB immediately.

We truly appreciate your efforts and attention to compliance within the spirit of human subject's protection. We wish you great success with your research.

Sincerely,

Tammy L. Sonnentag, PhD

Tammy L. Sonnentag, PhD.
Chair, Institutional Review Board
Xavier University

TLS/sb

Appendix L

Xavier University IRB Modification Approval Letter 3

August 10, 2022

Taylor Pitcher
[redacted]

Re: Protocol #21-005, *Unrealistic Optimism and Psychological Wellbeing in First Year College Students*

Dear Ms. Pitcher:

The IRB has reviewed the request to modify your study, referenced above. We understand that you have added research assistants and a new recruitment strategy. We are able to continue to grant an exempt determination for your study based on the information you provided. Therefore, your above-referenced study, as modified, continues to meet one of the Exempt categories under Federal Guidelines 45CFR46.

Please note that if you wish to further modify your study, it will be necessary to obtain IRB review prior to implementing the modification. If any adverse events occur, please notify the IRB immediately.

We truly appreciate your efforts and attention to compliance within the spirit of human subject's protection. We wish you great success with your research.

Sincerely,

Tammy L. Sonnentag, PhD

Tammy L. Sonnentag, PhD.
Chair, Institutional Review Board
Xavier University

TLS/sb

Appendix M

Xavier University Adverse Event Form Approval Letter

November 18, 2022

Re: Protocol #21-005, *Unrealistic Optimism and Psychological Wellbeing in First Year College Students*

Taylor Pitcher

[redacted]

Dear Ms. Pitcher:

Thank you for alerting our office to your unexpected event. From the description provided in the event report, there is no evidence of harm. Reviewers believe that you have described an acceptable procedure for identifying and fairly compensating the few participants who failed to receive compensation for their involvement in the study.

Your efforts to safeguard all participants' rights to compensation, while ensuring potential risk is minimized, is greatly appreciated. Please contact our office if you have any questions. Thank you for your compliance efforts.

Sincerely,

Tammy L. Sonnentag, PhD

Tammy L. Sonnentag, PhD.
Chair, Institutional Review Board
Xavier University

TLS/sb

Appendix N

Informed Consent

Project Title: Unrealistic Optimism and Psychological Wellbeing in First Year College Students
Primary Investigator: Taylor Pitcher, M.A.

Summary of Study

My name is Taylor Pitcher, and you are being given the opportunity to volunteer to participate in a project conducted through Xavier University. The purpose of this study is to investigate first year college students' mental health expectations and psychological wellbeing over the course of the first semester of college. Participants in this study will be asked to complete an online survey via Qualtrics that includes questions about mental health, psychological wellbeing, and health-related behaviors. This survey will be completed at two time points (at the beginning of the fall semester and at the end of the fall semester). The study should take approximately 30 minutes to complete at the beginning of the semester and approximately 30 minutes to complete at the end of the semester. Thus, this study will take approximately 1 hour, allowing for individual differences as appropriate, for you to complete. Risks related to participation are minimal, and the only potential risk may be slight psychological discomfort due to the disclosure of personal information on confidential survey items about aspects of your mental health (e.g., depressive symptoms and anxiety symptoms). Benefits to taking part include providing information in the development of future interventions and screeners for first year college students.

Nature and Purpose of the Project

The purpose of this study is to investigate first year college students' mental health expectations and psychological wellbeing over the course of the first semester of college. Participants in this study will be asked to complete an online survey via Qualtrics that includes questions about mental health, psychological wellbeing, and health-related behaviors.

Why You Were Invited to Take Part

You are invited to take part in this study as you are a first-year college student who is at least 18 years of age, which is necessary for completion of this survey.

Study Requirements

Participants in this study will be asked to complete an online survey via Qualtrics that includes questions about mental health, psychological wellbeing, and health-related behaviors. This survey will be completed at two time points (at the beginning of the semester and at the end of the semester). The study should take approximately 30 minutes to complete at the beginning of the semester and approximately 30 minutes to complete at the end of the semester. Thus, this study will take approximately 1 hour, allowing for individual differences as appropriate, for you to complete.

Anticipated Discomforts/Risks

Risks related to participation are minimal, and the only potential risk may be slight psychological discomfort due to the disclosure of personal information on confidential survey items about aspects of your mental health (e.g., depressive symptoms and anxiety symptoms).

Benefits
Benefits to taking part include providing information in the development of future interventions and screeners for first year college students.

Confidentiality/Anonymity
Your responses are anonymous. All of your responses will be coded by participant ID number. That is, your name will not appear on any of your responses, so your responses cannot be traced directly back to you. However, you will be asked to access a separate link to enter your name and email address, and if you are being compensated with a gift card you will also enter your phone number, banner ID, and the name of your course professor who advertised this study to you. The documents containing participant names and other identifying information will be kept separate from the response data linked to participant ID numbers. Documents containing personal information will be kept on password-protected Excel documents only accessible by the primary investigator and her faculty advisor. These Excel documents will be stored on an external drive (flash drive) that will be kept in a locked cabinet in the PI's home office and will be stored in a separate location than the data linking participant ID numbers. Electronic data and ID numbers from survey responses will be stored on Qualtrics, on OneDrive, and on password protected computers belonging to the primary investigator and her faculty advisor. Data will only be accessible by the primary investigator and her faculty advisor.

The data will not be downloaded, accessed, or stored on public computers at any time. The data will be stored for three years after completion of the survey. After three years the data will be destroyed and moved to the trash and the trash will be emptied on both computers that have the data. It should be noted that personal identifiers may be removed, and the de-identified information may be used for future research without seeking additional informed consent within these three years.

Compensation
You will receive either 1 credit for research participation or a $10.00 gift card to a restaurant contingent upon completing the following survey.

Refusal to participate in this study will have NO EFFECT ON ANY FUTURE SERVICES you may be entitled to from the University. You are FREE TO WITHDRAW FROM THE STUDY AT ANY TIME WITHOUT PENALTY.

Contact Information
If you have any questions at any time during the study, you may contact Taylor Pitcher at xxxxxx@xavier.edu or Dr. Jennifer Gibson at xxxxx@xavier.edu or (513) 745-xxxx. Questions about your rights as a research participant should be directed to Xavier University's Institutional Review Board at (513) 745-2870, or irb@xavier.edu. If you experience any distress as a result of taking part in this study, you may contact Xavier's Psychological Services center at (513) 745-2870, or the Xavier University Counseling Services located at the Health United Building at (513) 745 3022.

You may print a copy of this form or contact the PI at xxxxx@xavier.edu to request a copy be sent to you.

I have been given information about this research study and its risks and benefits and have had the opportunity to contact the researcher with any questions, and to have those questions answered to my satisfaction. By completing the elements of the study as previously described to me, I understand that I am giving my informed consent to participate in this research study.

Please answer the following:

- o I consent
- o I do not consent

Appendix O

Debrief

Thank you for participating in this study. We conducted this study to investigate first year college students' mental health expectations and psychological wellbeing over the course of the first semester of college. If you have questions about this study, please contact Taylor Pitcher at xxxxx@xavier.edu or Dr. Jennifer Gibson at xxxxx@xavier.edu or (513) 745-xxxx. Questions about your rights as a research participant should be directed to Xavier University's Institutional Review Board at (513) 745-2870, or irb@xavier.edu.

If you experience any distress as a result of taking part in this study, you may contact Xavier's Psychological Services center at (513) 745-2870, or the Xavier University Counseling Services located at the Health United Building at (513) 745 3022.

Summary

Title. Unrealistic Optimism and Psychological Wellbeing in First Year College Students

Problem. Unrealistic optimism, also known as optimism bias, occurs when one believes that things will go well when there is no real indication that they will (Weinstein, 1980). Unrealistic optimism tends to be associated with more risky behaviors, less health-promoting behaviors, and greater belief in one's invulnerability (Dillard et al., 2009; Spendelow & Jose, 2010; Weinstein, 1980). Currently, there is limited information regarding first year college student's assessment of their mental health risk, and the implications of unrealistic optimism on their mental health. This is important to study because the transition from high school to college can be stressful and there are elevated rates of mental health problems (e.g., depression, anxiety, substance use) among students on college campuses (Auerbach et al., 2018; Pedrelli et al., 2016). Thus, the present study sought to expand the literature on unrealistic optimism, mental health, and first year students in order to inform future studies and applied research.

Method. First year college students were recruited through Xavier University's participant pool, courses with predominantly first year students, student organizations, and at first year residences from 2021 to 2022. Participants completed a survey at the beginning of their first college semester (T1) examining their risk assessments of future mental health problems (anxiety and depression). These same students then completed a second survey at the end of their first college semester (T1), which examined their current mental health and involvement in health promoting activities. The measures included the Patient Health Questionnaire – 9, Generalized Anxiety Disorder – 7, Satisfaction with Life Scale, Positive and Negative Affect Schedule, Marlowe-Crowne Social Desirability Scale Short Form, Health Promoting Life-Style Profile Second Edition, and an Unrealistic Optimism Risk Assessment. A minimum of 152 participants needed to be retained from T1 to T2; however, only 104 were retained. Analyses examined the data from 187 participants in T1 instead. Participants were placed into different depression and anxiety groups: unrealistic optimists, realists, and unrealistic pessimists. In the primary analyses, seven one-way analyses of covariance (ANCOVAs) and one simple main effects test were conducted to examine if group status at T1 was associated with psychological well-being and health promoting behaviors at T1, when controlling for social desirability. Exploratory analyses, including ten ANCOVAs, were conducted on the longitudinal data as well.

Findings. There were three main takeaways from this study. First, this particular cohort of first year students had high social desirability despite the anonymity of the surveys. Second, this cohort also unexpectedly had more unrealistic pessimists than previous cohorts in unrealistic optimism research studies. Lastly, results indicate that unrealistic optimists had worse mental health outcomes than realists and unrealistic pessimists. Specifically, depression group status was significantly related to positive affect when controlling for social desirability, $F(2,183) = 3.20$, $p = .04$. Results from pairwise tests suggest that students who are unrealistically optimistic about their risk for depression symptoms were trending towards lower positive affect than realists. Additionally, anxiety group status was significantly related to negative affect when controlling for social desirability, $F(2,183) = 5.33$, $p = .006$. Specifically, unrealistic optimists reported more negative affect than unrealistic pessimists, $p = .009$, and realists $p = .013$.

Implications. Despite limitations, this research filled a number of gaps in the unrealistic optimism literature and has implications for applied research that could examine the benefits of

identifying students' optimism status. Furthermore, this study offered interesting insights about optimism group statuses that can inform future experimental studies, as well as popular perception. For example, popular psychology often suggests the benefits of improving optimism; however, more optimism may not always be advantageous. Optimism is likely more nuanced than commonly perceived, as this study suggests that when optimism is unrealistic it is associated with negative mental health outcomes. Thus, more care should be taken when making efforts to increase optimism, such that it is clear that one should increase their realistic (rather than unrealistic) optimism.