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Engagement and Appraisals of Risky Behaviors Among Repressors in a University Sample

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ENGAGEMENT AND APPRAISALS OF RISKY BEHAVIORS AMONG REPRESSORS IN A UNIVERSITY SAMPLE

A THESIS

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By

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Abstract

Repressors are individuals who report low anxiety on the Taylor Manifest Anxiety Scale (Taylor, 1953) and high defensiveness on the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960). These individuals are largely out of touch with their true feelings of anxiety and general distress, as indicated by discrepancies between their self-reported emotions and objectively measured physiological symptoms. Prior research has indicated that repressors underreport behaviors that could be negatively perceived, such as substance and alcohol use. This study assessed risky behaviors and appraisals of benefits and consequences among 50 classified repressors and 50 randomly selected nonrepressors from a university sample of 401 participants. Analyses of covariance were used with gender and ethnicity as covariates, as well as follow up *t*-tests. It was found that repressors reported significantly less engagement in illicit drug use, aggressive and illegal behaviors, risky sexual activities, heavy drinking, irresponsible school behaviors, as well as significantly less benefits from these activities. No significant differences were found for reporting of engagement and appraisals of high-risk sports between repressors and nonrepressors.

Keywords: repressor, repressive coping, risky behaviors, university sample

Engagement and Appraisals of Risky Behaviors Among Repressors in a University Sample

Who are Repressors?

Human beings rely on a variety of coping strategies to face distressful thoughts and emotions (Szentagotai & Onea, 2007). Some individuals may freely express a wide range of affect, while others may be guarded in their outward display of less socially acceptable feelings, such as anger or anxiety. Meanwhile, another subset of individuals, referred to as repressors (Weinberger, Schwartz, & Davidson, 1979) may be so unwilling to face negative information that they may unintentionally avert acknowledgement of certain emotions, events, or facts that give rise to distress (Myers & Derakshan, 2004; Newman & Hedberg, 1999; Millar, 2006)

Repression can be considered a personality trait that reflects an individual's overarching pattern of coping with aversive experiences (Szentagotai & Onea, 2007). The repressive coping style was operationalized in 1979 through Weinberger, Schwartz and Davidsons's (1979) identification of individuals who reported low anxiety scores on the Taylor Manifest Anxiety Scale (TMAS; Taylor, 1953) and high defensiveness scores on the Marlowe-Crowne Social Desirability Scale (MC-SDS; Crowne & Marlowe, 1960). Currently, these same scales are used to identify repressors, as well as a number of alternative scales that are highly correlated to the originals (Myers, 2000). Through various methods of classification, repressors have been shown to make up between 10% and 20% of

non-clinical populations, and up to 50% of certain populations that include chronically ill patients and elderly groups (Myers, 2010).

How is Repression Distinguished from Defensiveness?

Prior research has investigated differences between repressors and defensive non-repressors. Weinberger (1990) identified two distinct forms of defensiveness. The first form, anxious defensiveness, is represented by individuals who score highly on both defensiveness, self-report scales (referred to as "restraint" in Weinberger's study), and distress self-report scales, and the second form, repression, is represented by individuals who score highly on restraint self-report scales, but low on distress self-report scales (Weinberger, 1990). Although both forms of defensiveness involve strategies that an individual employs to prevent psychological discomfort (Garssen, 2007), anxious defensiveness includes an awareness of negative emotions, and may have a basis in impression management, in which an individual may purposely avoid expressing negative emotions in order to make a favorable impression on others (Garssen, 2007). In contrast, repression involves more self-deception, and occurs when an individual unintentionally inhibits negative thoughts from himself before he can admit such thoughts have arisen (Garssen, 2007). Repressors' avoidance of accurate perception and communication of their emotional experiences is likely based on their strong desires to defend highly esteemed beliefs about themselves (Weinberger and Davidson, 1994), as above all else, repressors have been shown to value a rational, non-emotional approach to life (Weinberger et. al, 1979).

Weinberger and Davidson's study (1994) found that repressors' style of affect regulation differed significantly from that of impression managers. Although both repressors and impression managers had high scores on the MC-SDS, repressors were unable to respond in a "socially desirable" way in the experiment by emotionally disclosing to another participant, as the impression managers did when instructed. In addition, repressors denied that a possible cause for an increase in their heart rate during self-disclosure could be emotional arousal, as the impression managers admitted. Such findings indicate that repressors' emotional inhibition is based on their own self-deception rather than interpersonal concerns to appear socially acceptable (Weinberger and Davidson, 1994).

Physiological Characteristics of Repression

The original Weinberger et al. (1979) study on repressors and many thereafter observed that repressors are not in touch with their true levels of anxiety (Meyers, 2010???). Repressors have shown a greater discrepancy between their self-reported anxiety levels and physiological arousal levels compared to those of both low anxious and high anxious participants (Weinberger, Schwartz, and Davidson, 1979; Weinberger, 1990; Derakshan and Eysenck, 1997). Physiological tests such as heart rate measurements and skin resistance reactions (e.g., facial-muscle tension) commonly indicate repressors have stress reactivity equal to or greater than that of individuals who admit experiencing considerable distress (Weinberger, 1990). It has been suggested that

considerable physiological effort is involved when repressing negative thoughts, contributing to high autonomic reactivity in repressors (Schwartz, 1990).

Repressors avoid recognizing that they have a heightened physical response and that the associated tension in their body may be one of the causes of some diseases (Eagle, 2000). Repressors tend to ignore a number of symptoms of physical pathology (e.g., Byrne et al., 1968) and believe that they have a lower probability of developing illnesses (Myers and Brewin, 1996; Myers and Reynolds, 2000) although they may actually have greater health vulnerabilities (e.g., Jensen, 1987; Jamner, Schwartz and Leigh; reported in Meyers, 2000). A large body of research suggests that the repressive coping style may be associated with a variety of adverse physical health outcomes, including impaired immune functioning (Brown, O'Leary and Murasko, 1989, as cited in Meyers, 2000), high blood cholesterol (Niaura, Herbert, McMahon and Somerville, 1992, as cited in Meyers, 2000), and cancer (Jensen, 1987), among a number of other health risks (Meyers, 2000).

Psychological Characteristics of Repression

Repressors avoid reporting certain affect, traits, or behaviors that might make them appear negatively (see Myers, 2010, Myers, 2000, for reviews). When asked about life experiences, repressors are more likely than nonrepressors to report more positive events and fewer negative events (Myers and Brewin, 1996). Repressors consistently report lower levels of psychological symptomology than non-repressors (Myers and Vetere, 1997) and report lower levels of alexithymia than truly low-anxious individuals although dissociations between their self-report

and interview measures have been noted (Myers et al., 1995; Myers, 2010). When describing themselves, repressors use less negative words than non-repressors (Myers and Brewin, 1996). After watching videotape recordings of themselves making a speech, repressors rated themselves on the videotape as less behaviorally anxious than did the judges, which did not occur for non-repressors (Derakshan & Eysenck, 1997).

Repressors demonstrated beliefs that they have lower likelihoods of experiencing negative consequences or events than the average person (Derakshan and Eysenck, 1997), a bias not indicated among any of the other personality groups in this study. Eysenck (1997) describes this as an opposite interpretive bias that leads repressors to minimize the threat of stimuli and situations, and to interpret ambiguous stimuli in a consistently nonthreatening fashion. Repressors have also been shown to rate hypothetical negative events as significantly more likely to be caused by a composite of external, unstable and specific factors, compared to non-repressors (Creswell & Myers, 2002).

Research has shed light on a number of noteworthy contrasts in repressors' responses. Although repressors rate hypothetical negative events as less likely to be due to internal causes on a direct measure of attributional style (i.e. a question that asks participants to rate how likely they would be to experience consequences if they engaged in a behavior), they rate hypothetical negative events to be more likely due to internal causes on indirect measures (i.e. a question that asks participants how likely an individual besides themselves would be to experience consequences from engaging in a certain behavior;

Creswell & Meyers, 2002). Also, although repressors tend to downplay negative likelihoods of events, they do not necessarily overstate the positives. Interestingly, repressors did not differ from non-repressors on their comparative optimism for positive events and they did not describe themselves more positively when using positive descriptors (Codd & Myers, 2009; Myers & Brewin, 1996).

Although repressive coping might initially seem effective in avoiding negative affect or discomfort, it is not psychologically helpful or healthy for an individual over time (Geraerts, Merckelbach, Jelicic, & Smeets, 2006). A study by Geraerts et al. (2006) found that although repressors reported the lowest number of negative (i.e. anxious) thoughts during a certain period of time, seven days later repressors reported the most intrusions of thoughts that they had been instructed to suppress. The repressive coping style has also been linked with specific memory impairments, as studies have illustrated repressors to have limited access to their childhood memories and even their more recent autobiographical memories (Barnier et al., 2004).

How Does Repression Work?

Derakshan, Eysenck, and Meyers (1997) have proposed the Vigilance-Avoidance Theory to explain the process of repression, a well-used theory regarding the cognitive methods that individuals use when they repress. This theory postulates that both repressors and high anxious individuals initially have a rapid vigilant response to self-relevant threat stimuli. However, this initial vigilance stage in repressors activates an avoidance stage that inhibits these individuals' conscious experience of anxiety. In this stage, repressors utilize

opposite cognitive biases that help them minimize the threat of stimuli and situations and consistently interpret ambiguous stimuli nonthreateningly (Derakshan, Eysenck, and Meyers, 1997). However, opposite biases in repressors may occur primarily with personally relevant sources of information. Research has suggested that the processes producing interpretive biases, which may be present in repressors, do not operate in the rapid fashion typical of pre-attentive processes that are typical of selection attention, as interpretive biases take several hundred milliseconds to develop (Eysenck, 2000).

Repressors & Report of Substance and Alcohol Use

Repressors' denial of negatively perceived emotions, events, or consequences is an issue of concern in the area of substance and alcohol use. First, repressors may see themselves as less likely than others to experience negative consequences from engaging in risky behaviors, potentially leading to more frequent engagement of substance and alcohol use or heavier usage. Second, repressors' tendency to underreport negatively perceived behaviors might prevent these individuals from disclosing to others that they are engaging in such behaviors. Substance use and abuse and heavy alcohol consumption are highly prevalent behaviors among American college populations and they pose considerable risks for such individuals. In a study of college students, about half of the male and one-third of the female participants were found to be within range for risk, and about 15% of the students classified as alcohol dependent (Williams and Ricciardelli, 1996 as cited in Shirachi and Spirrison, 2006) Binge drinking has been shown to be associated with other risky behaviors that include a variety

of other illicit drugs, use of marijuana, cigarettes, amphetamines, LSD, other hallucinogens, and chewing tobacco (Wechsler, Dowdall, Davenport, & DeJong, 1995).

Although research is limited, prior studies have indicated that repressors do in fact underreport these types of behaviors in comparison to non-repressors. A university study in 2006 observed that repressors reported significantly less substance and alcohol use, and believed they were less likely to experience harmful consequences of drinking in comparison to other drinkers (Shirachi & Spirrison, 2006). Weinberger and Schwartz (1990) found that college repressors reported drinking less frequently than nonrepressors. Furnham and Traynar (1999) found that repressors reported more positive/healthy and less negative/unhealthy coping styles, with alcohol and drug use considered as part of the unhealthy coping style. Weinberger and Bartholomew (1996) found that repressors reported the lowest frequency of alcohol use, quantity per occasion and frequency of intoxication. In this study, repressors were less likely than nonrepressors to report that they used alcohol to generate positive affect, reduce negative affect and facilitate social interaction.

Current Study: Engagement and Appraisals of Risky Behaviors Among Repressors

Although prior research has investigated differences in self-reports of substance and alcohol use in repressors and non-repressors, no study to the authors' knowledge, has yet to compare repressors' and non-repressors' reports of frequencies of engagement and cognitive appraisals of other types of risky

behaviors that commonly occur among college populations. This current study aimed to determine whether repressors reported different levels of engagement in risky behaviors than non-repressors in the past six months as well as reported differences in their ratings of likelihoods of benefits and consequences that would occur from such engagement. Question items in this study reflected six different topics of risky behaviors for each scale of frequency, benefits, and consequences. These six topics were illicit substance use, heavy alcohol consumption, risky sexual behaviors, aggressive/violent behaviors, irresponsible academic/work behaviors, and high-risk sports. The authors' hypotheses are described as follows:

Hypothesis 1: Engagement in Risky Behaviors

Consistent with the findings of previous literature, it was hypothesized that repressors would report less engagement in risky behaviors such as illicit substance use, and heavy alcohol consumption. Although behaviors such as risky sexual behaviors and aggressive and illegal behavior, and irresponsible academic/work behaviors have not been studied previously among repressors, to the authors' knowledge, research has suggested that repressors underreport behaviors and experiences that may be perceived negatively. In was thus speculated that repressors would report less engagement in risky sexual behavior, aggressive and illegal behavior, and irresponsible academic/work behaviors. In contrast, high risk sports may be regarded positively among college students. Such sports included rock or mountain climbing, playing non-contact team sports, snow or water skiing, and playing individual sports. It was thus hypothesized that

there would be no significant differences in reporting of engagement in these behaviors between repressors and nonrepressors.

Hypotheses 2: Consequence Appraisals of Risky Behaviors

In line with research that has shown repressors avert their attention away from negative consequences on direct questionnaires, it was hypothesized that repressors would report lower ratings of personal consequences from all risky behaviors than non-repressors.

Hypothesis 3: Benefit Appraisals of Risky Behaviors

Previous literature has indicated that although repressors may have greater optimistic biases for negative events than nonrepressors, they do not have greater optimistic biases for positive events, meaning they do not feel that they are more likely to experience positive events. (Myers & Brewin, 1996) Therefore, the authors hypothesized that there would be no significant differences between appraisals of benefits between repressors and non-repressors.

Methods

Participants and Selection Criteria

Participants consisted of 401 undergraduate psychology students from Montclair State University who were participating in this study for course credit. The sample was comprised of 83 males (21%), 317 females (79%), and one absent response. 224 (56%) of the students classified themselves as "Caucasian", 88 (22%) as "Other Latino or Hispanic", 40 (10%) as "African American", 26(6%) as "other", 20 (5%) as "Asian", 1 as "American Indian or Alaskan Native", 1 as "Native Hawaiian or Other Pacific Islander" and 1 as "Mexican,

Mexican-American". 291 participants (73%) were between the ages of 18-20; 88 (22%) of participants were between the ages of 21-25; 20 (5%) of participants were 26 and above. 164 (41%) participants were in their freshman year of study; 118 (29%) participants were in their sophomore year; 77 (19%) of participants were in their junior year, and 39 (10%) participants were in their senior year.

Procedure

The entire study was administered online to participants and was completely anonymous. Participants enrolled in the study through the university research website which provided a direct link to an online informed consent. Once participants agreed to the terms of the informed consent, they were directly connected to the survey questions. The survey included 6 demographic questions, and three different major scales, the Taylor Manifest Anxiety Scale (TMAS) assessing anxiety, the Marlowe-Crowne Defensiveness Scale (MCDS) assessing defensiveness, and the Cognitive Appraisals of Risky Events scale (CARE) assessing involvement and appraisals of various risky behaviors. After the participants completed the survey they were asked to click a link to a separate survey that asked them to provide their name so that they could be given credit for taking the survey on the university research website.

To the authors' knowledge, this is the first web-based study to be administered among repressors. Participants were informed that the study was completely anonymous and that participants' names would be collected on a separate survey with no linkage to their survey information. Anonymity of responses was used to provide high security to participants as this study inquired

participants on potentially incriminating information. In addition, an anonymous study was also presumed to increase participants' honesty in responses, particularly among a population of repressors, known to underreport a number of behaviors and emotions.

Scales

Taylor Manifest Anxiety Scale (TMAS). Consistent with the original study in which the repressive coping style was operationalized, the TMAS was used to assess trait anxiety of participants. The TMAS is a 50-item questionnaire based on the Minnesota Multiphasic Personality Inventory (MMPI) that is used to assess trait anxiety in an individual. This test has shown validity and consistency determined through its distribution on a large university sample and has been re-tested over time with relatively stable results (Taylor, 1953; Ellen, 1952). This test has been administered to different populations, with comparable results, with re-test results over .82 over 5 months and .81 for 9-17 months (Taylor, 1953). This questionnaire is largely made up of face validity questions regarding anxiety such as "I frequently find myself worrying about something"

Marlowe Crowne Social Desirability Scale (MC-SDS). Based off its use in Weinberger et al.'s original study (1979) on repressors, the MC-SDS scale was used to determine defensiveness levels of participants. The MC-SDS is a validated and empirically reliable scale (Ballard, 1992; Gump, Baker, & Samuel, 2000) consisting of 33 questions that contain statements representing a high degree of social desirability and acceptable values (Crowne & Marlowe, 1960).

An example of a question is "I don't find it particularly difficult to get along with loud-mouthed, obnoxious people" (Crowne & Marlowe, 1960).

Cognitive Appraisal of Risky Events Scale (CARE). The CARE scale (Fromme, Katz, & Rivet, 1997) is used to assess individuals on their participation in a range of risky behaviors, as well as their cognitive appraisals of likelihoods of benefits and consequences that they might receive from engaging in such behaviors. This measure has adequate internal reliability, and additional research has documented test-retest reliability and construct and predictive validity (Fromme, Katz, & Rivet, 1997). Exploratory and confirmatory analyses indicate that the 30 topics of the CARE (represented in each of the frequency, benefits, and consequences scales) reflect six factors: 1) illicit drug use, 2) aggressive and illegal behaviors, 3) risky sexual activities, 4) heavy drinking, 5) high risk sports, 6) academic/work behaviors.

Scale 1: Frequency of risky behavior in the past 6 months. This subscale inquired participants on whether they had engaged in 30 different risky behaviors in the past 6 months. Response format was free response to allow for greater variability in responses and freedom in number choices.

Scale 2: Expected benefits of engaging in risky behaviors. This subscale required participants to rate on a scale from 1-7, 1 being the lowest and 7 being the highest, the likelihood that they would receive benefits from engaging in the 30 listed risky behaviors.

Scale 3: Expected consequences of engaging in risky behaviors. This subscale required participants to rate on a scale from 1-7, 1 being the lowest and 7

being the highest, the likelihood that they would receive consequences from engaging in each of the 30 listed risky behaviors.

Behavioral Frequency Data Clean Up

For the behavioral frequency scale, a portion of the participants responded through use of word descriptors or phrases rather than numeric responses. Words and phrases included: "unknown amount", "probably", "multiple times" "yes, sometimes", "moderately", "yes", "now and then", "many", "plenty", "a lot", "often", "numerous times", "somewhat often", "most of the time", "a good amount", "more than I should", "too many to count", "all of the time", "all of them", "I lost count", "several times, usually do", "always", "a million", "several" "not too many times" "seldom", "rarely", "not often". For all such responses above, averages of the entire sample for the question item was substituted. Other nondescript phrases pertaining to a particular question type were also recorded as the average for that question (e.g. "every time I drink" as a response to how many times the participant engaged in drinking games in the past six months). In addition, there were several responses that included dates and Excel formulas that could not be interpreted and blank responses, in which case averages of the entire sample for the question item were also used. Averages of question items were substituted before the groups were stratified into repressors and non-repressors to prevent skewed data. For the frequency subscale, averages were substituted for 221 responses out of 12030 total responses (1.83%).

A number of data were calculated based on a six-month timespan. For instance, "weekly" or "once a week" was recorded as 24 times, 3 times a week

was recorded as 72 times, 4 times a week was calculated as 96 times, and "every day" was recorded as 168 times.

If a response used the words "more than", "less than", "about", or "maybe" before a particular number, then only the particular number was recorded (e.g. 20+ or more than 20 times = 20; less than 20 times = 20). A number spelt out was recorded as that number (e.g. seven times= 7).

If a range of numbers was given, then the average of that range was given (e.g. 20-30 times = 25 times). If "never", "zero", "no", or any phrase indicating zero involvement in a behavior in the past six months was given, the response was recorded as 0. The response "a couple" was recorded as 2, and "a few" was recorded as 3.

Benefits & Consequence Data Clean Up

For the expected benefits scale, averages of columns before stratification of repressor status were used for 41 blank responses, out of a total of 12030 total responses (less than 1%). For the expected consequences scale, averages of columns before stratification of repressor status were used for 64 blank responses, out of a total of 12030 total responses (less than 1%).

Classification of Repressors

In order to find "true" repressors, the authors felt it necessary to use stringent criteria in cutoff points. In Weinberger et al.'s original study on repressors (1979), the authors used the normative median of 13 found by the TMAS development study (Taylor, 1953) as a cutoff to determine low anxiety scores for repressors. Because this current study had a much higher median of 23

for the TMAS scores of its participants, the authors decided to use the first quartile anxiety scores (16 and below) as the criteria for low anxiety scores. 109 participants out of 401 participants scored in this range. Also consistent with the original Weinberger et al. study on repressive coping (1979), high defensiveness scores in this current study were determined through use of upper quartile scores (20 or above). This is due to the fact that low anxiety scores predict high defensiveness scores per se, so it may be necessary to use considerably high defensiveness scores to determine "true" repressors (Weinberger et al., 1979). 110 participants scored in the upper quartile of the MC-SDS (20 or above). The 109 participants that scored in the first quartile of the TMAS were then classified as repressors or non-repressors based on their MC-SDS scores. The participants with scores in both groups were matched, which created 50 participants categorized as "repressors". Omitting non-extreme scorers in analyses is commonly practiced in repressor research (e.g., Asendorpf & Scherer, 1983; Derakshan & Eysenck, 1997; Myers & Brewin, 1994, 1996; Myers & Derakshan, 2004b; Myers & Steed, 1999; Myers et al., 1998, Experiment 2, as cited in Myers, 2010). The other alternative of using a median split is not recommended as borderline repressors may be included in the repressor group, which could interfere with proper assessment (Myers, 2010).

Data Analysis

All questions in each of the six risky behavior topics were averaged and a composite score was computed for each participant, as advised by the creators of the CARE (Fromme, Katz, & Rivet, 1997). 50 non-repressors were randomly

selected to compare against 50 repressors to prevent heteroscedasticity of data, which would result from a comparison of repressors to the rest of the sample. The repressor group consisted 34 females and 16 males. Ethnicity consisted of 21 participants classified as "Caucasian", 14 participants classified as "Other Latino or Hispanic", 8 participants classified as "African American", 4 participants classified as "Asian", and 3 participants classified as "other". The nonrepressor group consisted of 41 females and 9 males. Ethnicity consisted of 5 participants classified as "Asian", 6 participants classified as "African American", 25 participants classified as "Caucasian", 10 participants classified as "Other Latino or Hispanic", and 4 participants classified as "Other".

Chi squared tests were conducted on participant gender and ethnicity categories. Although statistically nonsignificant (both ps> .05), differences in gender and ethnicity distributions between the repressors and nonrepressors warranted, as a cautionary measure—borne out in the analyses below-- their treatment as covariates in the following analyses.

Data for analysis consisted of repressor (N=50) and nonrepressor (N=50) group participant responses to the CARE assessment averaged over items for each of the three subscales: behavioral frequency, likelihood of benefits, and likelihood of consequences, according to six subscale topics (1. illicit drug use, 2. aggressive and illegal behaviors, 3. risky sexual activities, 4. heavy drinking, 5. high risk sports, and 6. academic/work behaviors). For the first analysis, a 2 (Repressor Status) X 6 (Subscale Topic) Analysis of Covariance (ANCOVA) was conducted on the behavioral frequency data, with participant gender and ethnicity as

covariates (Refer to Appendix A). For the second analysis, a 2 (Repressor Status) X 2 Scale X 6 (Subscale Topic) ANCOVA was conducted on benefit and consequences likelihood appraisal data, again with gender and ethnicity as covariates (Refer to Appendix B). A parallel, follow-up ANCOVA was conducted with Subscale topics 5 (high risk sports) and 6 (academic/work behaviors) removed to test hypotheses concerning negative behaviors (Subscale topics 1-4) exclusively.

Results

CARE item reliability

The CARE assessment consisted of 18 items (alpha = .7219), demonstrating acceptable internal reliability. Correlations of CARE question items are shown in Table 1. Reliability scores of all items are shown in Table 2.

Table 1

Correlation Matrix of CARE items

	F1	F2	F3	F4	F5
F1	1.0000				
F2	.7443	1.0000			
F3	.0437	.0532	1.0000		
F4	.8577	.6083	.1967	1.0000	
F5	.1398	.2405	.0274	.1994	1.0000
F6	.4534	.6289	.1015	.4566	.2935
B1	.5082	.3893	.0815	.4910	.2093
B2	.4394	.7133	.0768	.4188	.2690
B3	.1205	.1791	.5950	.2736	.2866
B4	.3547	.3188	.1654	.5855	.2251
B5	-.0546	.0300	.0829	-.0575	.2676
B6	.1407	.1168	.1306	.2222	.0482
C1	-.1478	-.1519	-.2003	-.2466	-.0109
C2	-.1428	-.0786	-.1469	-.2770	.0544
C3	-.1624	-.0826	.0019	-.2722	-.0267
C4	-.0399	-.0575	-.0638	-.0979	-.0101
C5	-.0827	.0084	-.0503	-.1264	-.0908
C6	-.0782	-.0891	-.1179	-.1854	-.0035

	F6	B1	B2	B3	B4
F6	1.0000				
B1	.2798	1.0000			
B2	.4730	.4490	1.0000		
B3	.2550	.4497	.3163	1.0000	
B4	.3206	.5584	.4372	.3988	1.0000
B5	.1537	.1496	.0164	.2941	.0341
B6	.4045	.1834	.2498	.3101	.3816
C1	-.0713	-.3030	-.1827	-.1916	-.3141
C2	-.0507	-.0311	-.1657	-.0569	-.2786
C3	-.0777	-.1434	-.1683	-.1968	-.3191
C4	.0855	-.1658	-.1605	-.0882	-.2470
C5	.0117	-.1422	.0281	-.0549	.0103
C6	.0073	-.0234	-.1899	-.0564	-.1703

	B5	B6	C1	C2	C3
B5	1.0000				
B6	-.1503	1.0000			
C1	.1082	-.3414	1.0000		
C2	.3460	-.4686	.7730	1.0000	
C3	.2113	-.4299	.7561	.8673	1.0000
C4	.0927	-.1762	.6823	.5283	.5726
C5	-.2796	.0612	.2371	.2041	.2343
C6	.2313	-.3428	.6644	.7667	.7273

	C4	C5	C6
C4	1.0000		
C5	.3235	1.0000	
C6	.6975	.2819	1.0000

Table 2

Reliability Analysis of CARE Items- Scale (Alpha)

Item	Mean	Std Dev	Cases
F1	5.9863	21.6427	100.0
F2	1.3286	4.1134	100.0
F3	1.3339	3.7719	100.0
F4	5.4629	11.6455	100.0
F5	3.3584	12.0334	100.0
F6	4.9445	6.5826	100.0
B1	2.0400	1.5715	100.0
B2	1.4722	.7406	100.0
B3	1.7490	1.0821	100.0
B4	2.9133	1.9761	100.0
B5	3.7825	1.7276	100.0
B6	2.1322	1.2018	100.0
C1	4.9525	2.0953	100.0
C2	5.1406	2.0909	100.0
C3	5.1543	2.1353	100.0
C4	4.8491	1.9115	100.0
C5	2.6525	1.5606	100.0
C6	5.1708	1.6759	100.0

Risky Behavior Frequency Analysis of Covariance (ANCOVA)

Repressor status exhibited a main effect $F(1, 96) = 6.507$, $p < .05$. A main effect for the topic was not found, $F(5,480) = 1.268$, p>,05. There was an interaction between repressor status and topic, $F(5,480)= 4.45$, $p <.05$. Neither of the two covariates, gender or ethnicity, exhibited reliable effects concerning repressor status or topic. (ps>.05).

Table 3

Risky Behavior Frequency Analysis of Covariance Summary

Source	df_N, df_D	Sum of Squares	Mean Square	F	p
Topic	5, 480	628.652	125.730	1.268	.2762
Cov. Gender X Topic	5, 580	130.838	26.168	.264	0.93
Cov. Ethnicity X Topic	5, 480	67.788	13.558	.137	0.984
Topic X RS	5, 480	2205.829	441.166	4.45	.001*
RS	1, 96	1958.79	1958.119	6.507	.012*
Cov. Gender X RS	1, 96	881.954	881.954	2.265	.136
Cov. Ethnicity X RS	1, 96	158.397	158.397	.526	.470

Cov.= covariate; RS= Repressive status

Planned *t*-tests were then performed to determine whether repressors and non-repressors differed among the individual topics of illicit substance use, aggressive and illegal behaviors, risky sexual activities, heavy drinking, high-risk

sports, and irresponsible academic/work behaviors (Figures 1). For the first topic, illicit substance use, repressors reported significantly less average engagement than nonrepressors, $t(96)= 2.469$ $p<.05$ (0.832 episodes in past six months vs. 11.14 episodes in past six months, respectively). For the second topic, aggressive and illegal behaviors, repressors reported significantly less engagement than nonrepressors, $t(96)= 2.424$, $p<.05$ (0.438 episodes in past six months vs. 2.220 episodes in past six months, respectively). For the third topic, risky sexual activities, repressors reported significantly less average engagement than nonrepressors, $t(96)= 2.715$, $p<.05$ (0.467 episodes in past six months vs. 2.201 episodes in past six months, respectively). For the fourth topic, heavy drinking, repressors reported significantly less average engagement than nonrepressors, $t(96)= 2.555$, $p<.05$ (2.785 episodes in past six months vs. 8.1403 episodes in past six months, respectively). An opposite trend occurred for the fifth topic, high risk sports, as repressors reported a greater average engagement than nonrepressors, although not significantly, $p>.05$ (4.375 episodes in past six months vs. 2.342 episodes in past six months, respectively. For the sixth topic, irresponsible academic/work behaviors, repressors reported significantly less average engagement, $t(96)= 2.882$, $p=.009$, (3.498 episodes in past six months vs. 6.390 episodes in past six months, respectively). These results are demonstrated in Figure 1.

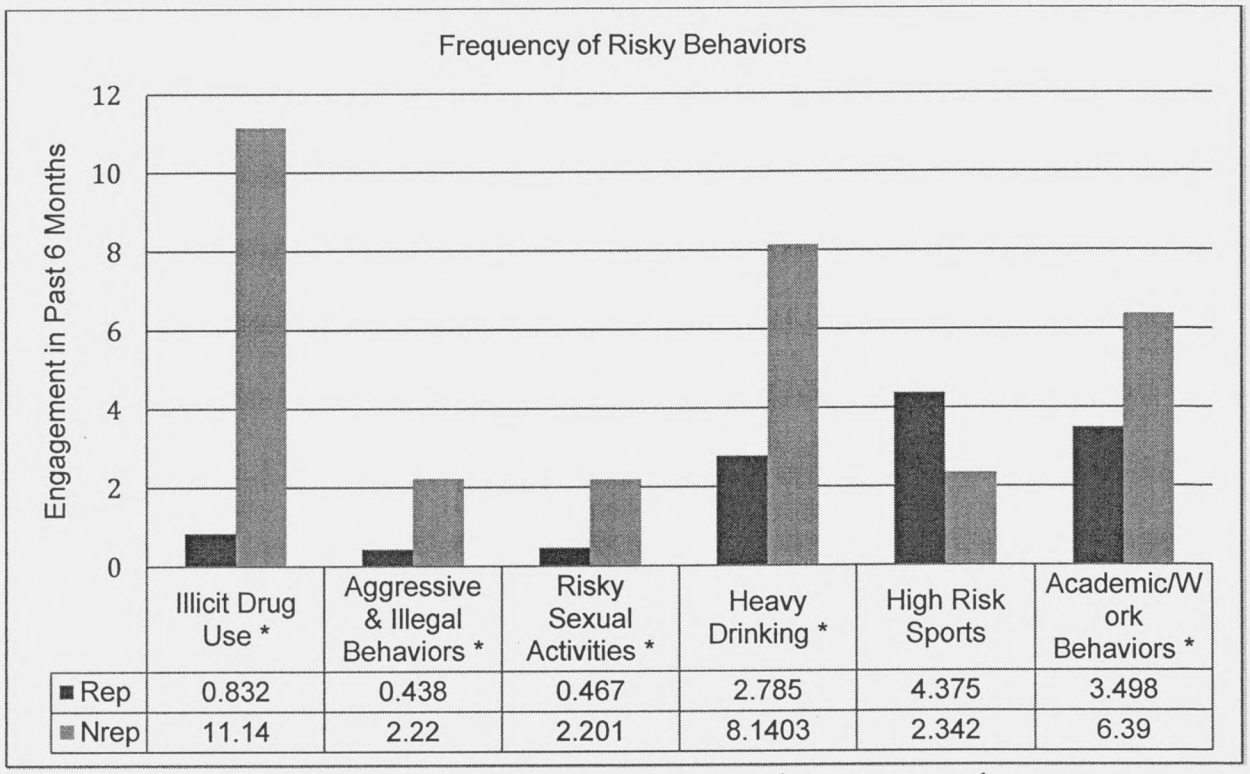

Figure 1. Frequency of risky behaviors among repressors and nonrepressors in past six months

Benefits and Consequences Likelihood Appraisals ANCOVA

Significant main effects were found for scales, $F(1,480)=6.904$, $p<.05$ and topics, $F(5,480)=2.629$, $p<.023$. However, there was no main effect for repressor status, $p>.05$. There was an interaction between scales and topics, $F(5,480)=10.896$, $p<.05$. There was also an interaction between scale and repressor status, $F(1,480)=7.007$, $p<.05$. Participant ethnicity did not reliably covary with repressor status or scales, $p>.05$ but it did with topic, $p<.05$. Participant gender covaried reliably for repressor status and topic, ps $< .05$.

Table 4

Benefits and Consequences of Risky Behaviors Analysis of Covariance Summary

Source	df_N, df_D	SS	MS	F	p
Scale Factor (B vs. C)	1, 480	71.479	71.479	6.904	.01*
Cov. Gender X Scale	1, 480	78.061	78.061	7.540	.007*
Cov. Ethnicity X Scale	1, 480	.033	.033	.003	.955
Scale X Group	1, 480	72.542	72.542	7.007	.009*
Topic	5, 480	15.514	3.103	2.629	.023*
Cov. Gender X Topic	5, 480	16.155	3.231	1.670	.140
Topic X Cov. Ethnicity	5, 480	5.884	1.177	.608	.694
Scale X Topic	5, 480	105.401	21.08	10.896	.000*
Scale X Topic X RS	5, 480	46.685	9.337	4.826	.000*
RS	1, 480	.021	.023	.003	.956
Cov. Gender X RS	1, 480	.124	.124	.016	.899
Cov. Ethnicity X RS	1, 480	3.266	3.266	.429	.514

Note. B= benefits; C=consequences; Cov.=covariate; RS= repressive status

Importantly, the Scales X Topic X Repressor Status was statistically significant, F (5,480)=4.826, p<.001. Accordingly, t-tests, adjusting for gender and ethnicity covariates, were then performed to determine whether repressors and non-repressors differed among their appraisals of the likelihoods of benefits and consequences across the six topics: illicit substance use, aggressive and illegal behaviors, risky sexual activities, heavy drinking, high-risk sports, and irresponsible academic/work behaviors, as reported by their ratings on a 1-7 Likert Scale (Figures 2-7, respectively). In regard to benefits, for the first topic, illicit drug use, repressors reported significantly less benefits than nonrepressors, t(1,96)= 2.671, p<.05, (1.633 vs. 2.447, respectively). For the second topic, aggressive and illegal behaviors, repressors reported significantly less benefits than nonrepressors, t(1,96)=2.555, p<.05 (1.293 vs. 1.651, respectively). For the third topic, risky sexual activities, repressors reported less benefits, but not significantly, p>.05, (1.628 vs. 1.870, respectively). For the fourth topic, heavy drinking, repressors reported significantly less benefits, t(1,96)=2.976, p<.05, (2.40 vs. 3.427, respectively). For the fifth topic, high-risk sports, repressors reported greater benefits, although not significantly, p>.05, (3.91 vs. 3.655, respectively). For the sixth topic, irresponsible academic/work behavior, repressors reported significantly less benefits, t(1,96)=2.067, p>.05, (1.952 vs. 2.312, respectively).

In regard to consequences, for the first topic, illicit drug use, repressors reported significantly higher consequences $t(1,96)=-2.503$, $p<.05$ (5.427 vs.4.478, respectively) than non-repressors. For the second topic, aggressive and illegal behaviors, repressors reported higher consequences (5.450 vs. 4.831, respectively), although not significantly, $p>.05$. For topic 3, risky sexual activities, repressors reported higher consequences (5.369 vs. 4.940, respectively), although not significantly ($p>.05$). For topic 4, heavy drinking, repressors reported higher consequences (5.151 vs. 4.547, respectively), although not significantly ($p>.05$). An opposite trend occurred for topic 5, high-risk sports, as repressors reported lower consequences (2.465 vs. 2.840), although not significantly ($p>.05$). For topic 6, repressors reported higher consequences (5.272 vs. 5.070), although not significantly ($p>.05$).

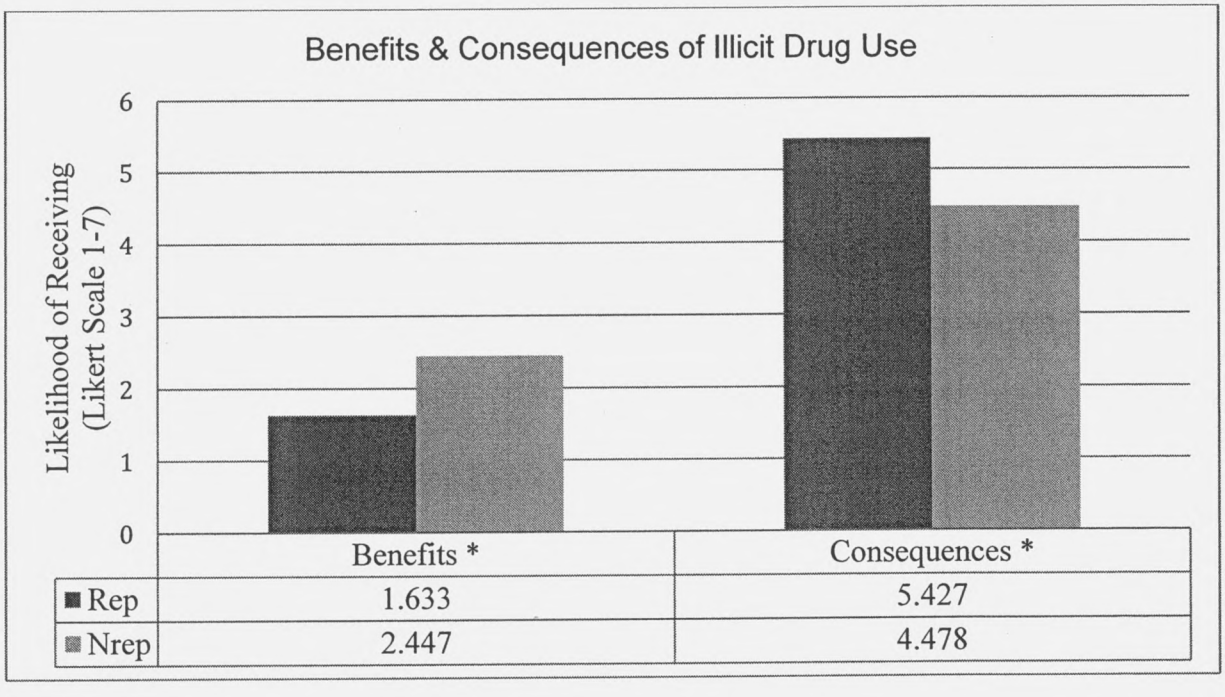

Figure 2. Benefits and consequences of illicit drug use among repressors and nonrepressors

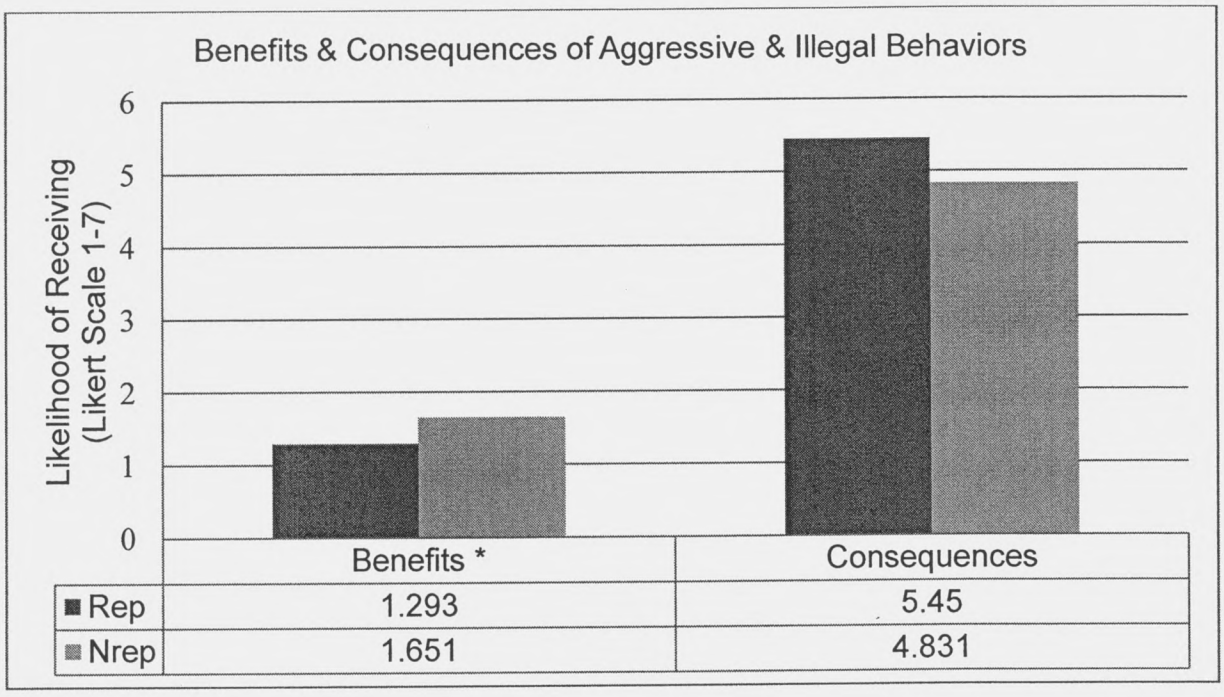

Figure 3. Benefits and Consequences of aggressive and illegal behavior among repressors and nonrepressors

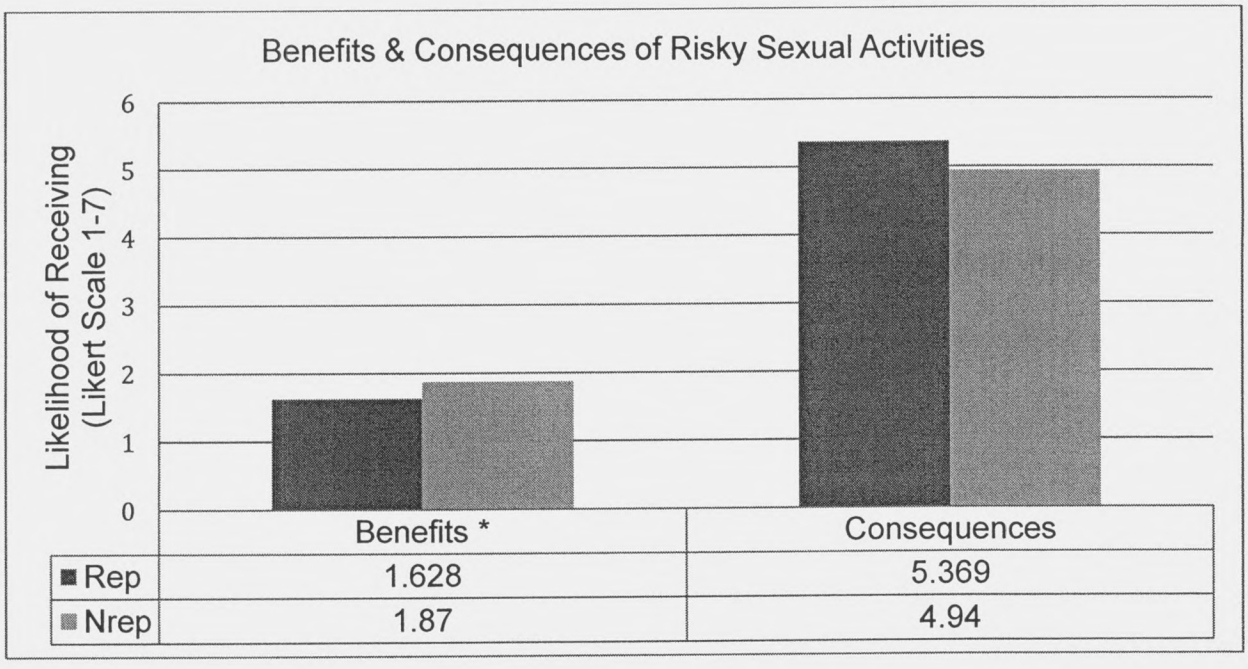

Figure 4. Benefits and consequences of risky sexual activities among repressors and nonrepressors

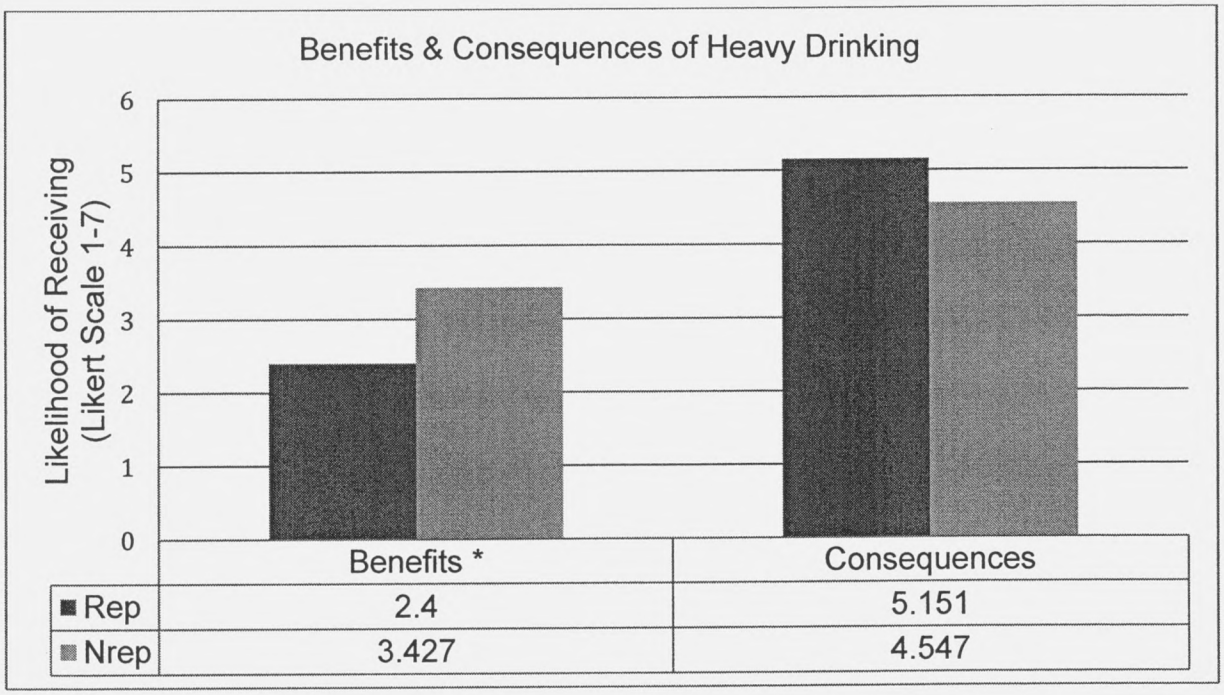

Figure 5. Benefits and consequences of heavy drinking among repressors and nonrepressors

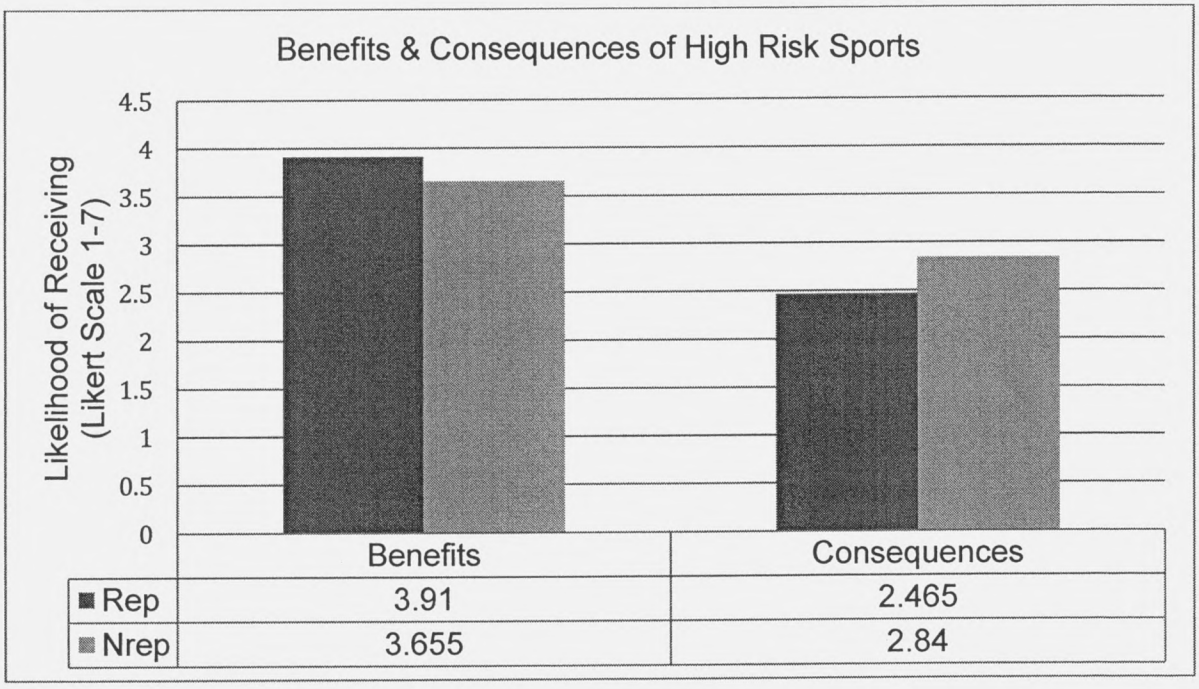

Figure 6. Benefits and consequences of high risk sports among repressors and nonrepressors

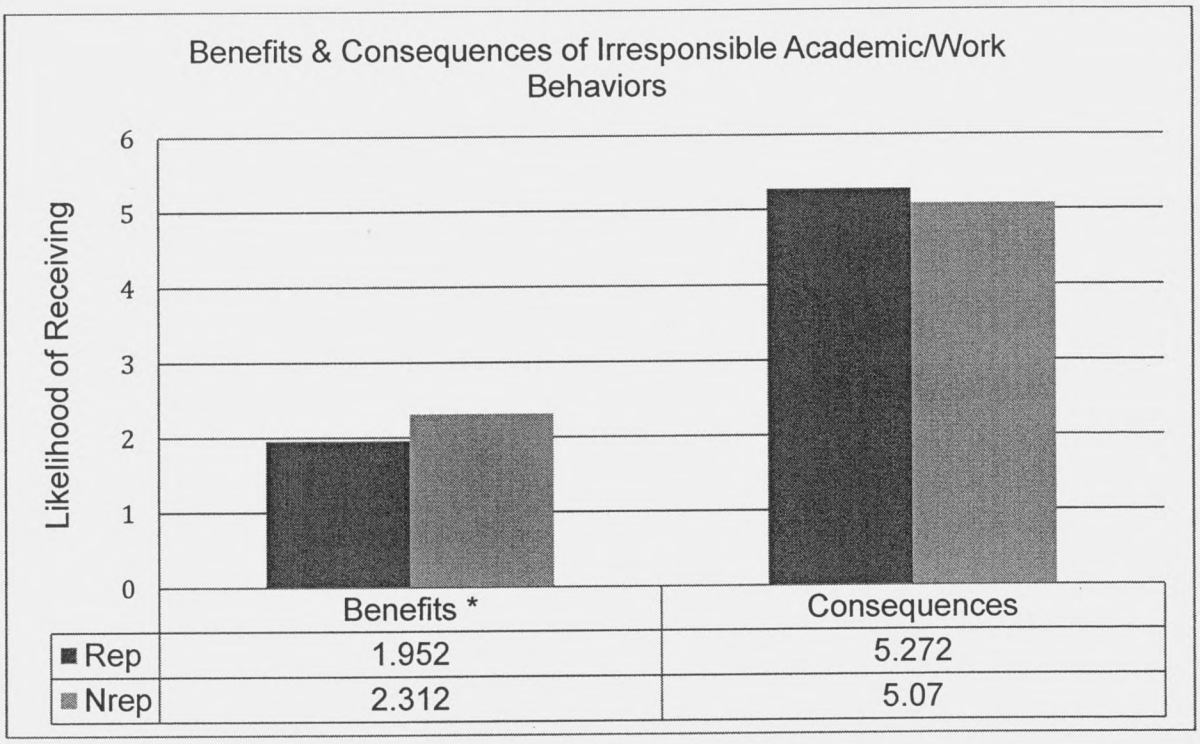

Figure 7. Benefits and consequences of irresponsible academic/work behaviors among repressors and nonrepressors

Benefits and Consequences ANCOVA with sports & academic/work behaviors removed

A further ANCOVA was performed with sports and academic behaviors removed, and repressor status did not differ reliably, nor did topics *p*s>.05. However, there was a significant interaction between repressor status and scales, $F(1,96)=10.209$, $p<.05$, as was a significant interaction between scale and topic, $F(3,288)=5.451$, $p<.05$. Unlike the earlier analysis, the interaction between repressor status, scale, and topic was no longer reliable, $p>.05$. Finally, gender reliably covaried with repressor status, $F(1,96) = 6.168$, $p<.05$. Remaining effects and interactions were statistically nonsignificant, all *p*s>.05

Discussion

To the authors' knowledge, this is the first study to assess frequency of behavior, and appraisals of benefits and consequences on a wide variety of risky behaviors among repressors. Previously unstudied behaviors of this population include risky sexual behaviors, aggressive and illegal behaviors, high-risk sports, and irresponsible school behaviors. Clinical implications of the results are described below.

Implications and Future Research

Hypothesis 1: Frequency of risky behaviors. In line with previous findings and the authors' hypotheses, results indicated that repressors reported less engagement in illicit drug use and heavy alcohol use. Also consistent with the authors' hypotheses, repressors reported less engagement in aggressive and illegal behaviors, risky sexual behaviors, as well as irresponsible academic/work behaviors. An intriguing finding in regard to high-risk sports is that repressors answered in the opposite direction than they did for all other high-risk behaviors. Although the results were not significant, repressors reported a higher engagement in high-risk sports than non-repressors. This finding is not necessarily surprising considering repressors' concerns to maintain a positive image of themselves. Although high-risk sports assessed by the CARE such as rock or mountain climbing, non-contact team sports, snow or water skiing, and individual sports have the potential to physically endanger individuals, these activities are more publicly acknowledged and socially rewarded. In addition, they provide a health benefit. This finding also indicates that repressors

differentially answer question items that are more likely to be perceived negatively and positively by others or by themselves. Thus, repressors do not underreport all high-risk activities and may provide a more accurate representation of their frequency of engagement and appraisals of certain high-risk activities that they may not perceive as negatively viewed.

From such a finding, it can be speculated that repressors are not merely cautious individuals who are overly concerned with "playing it safe". Thus, such motivations do not seem to be the reasons behind repressors' underreporting of other risky behaviors, such as illicit drug use, risky sexual behavior, aggressive and illegal behaviors, heavy drinking, and irresponsible school behaviors. Repressors admit to risk-taking when it may be a positively regarded risk.

It is also noteworthy that repressors significantly underreported irresponsible academic/work behaviors assessed through the CARE that are extremely common among students, such as "leaving tasks or assignments to the last minute", and would most likely not be regarded as negatively as the other risky behaviors. This suggests that repressors do not merely underreport behaviors due to a fear of incrimination (e.g. engagement in illegal activities) or due to severe embarrassment or guilt (e.g. engagement in risky sexual activities), but may underreport common peccadillos in order to maintain a perfectionistic view of themselves.

As it is well established in the literature that repressors underreport negatively perceived behaviors, future research should aim to determine the extent to which these individuals underreport, and most importantly, strategies to

prevent underreporting among this population. Many recovery programs for substance and behavioral additions emphasize the importance of the individual being able to openly admit that he or she engages in problem behaviors (Bristow-Braitman, 1995). In fact, this type of admittance is the first step in Alcoholics Anonymous (AA) as well as other twelve-step programs for addictive or negative behaviors (The Twelve Steps for Everyone, 1975). It is likely that repressors make up a signification portion of individuals who have clinical or subclinical symptoms who do not seek therapy. This research question should be further investigated.

Hypothesis 2: Consequence Appraisals. The findings revealed no significant differences in the way that repressors and nonrepressors viewed the likelihoods of consequences of all types of risky behaviors, with the exception of repressors reporting a significantly greater likelihood of consequences of illicit drug use. These results were largely inconsistent with the authors' second hypothesis that repressors would report lower ratings of consequences than nonrepressors. A potential reason for these findings could be that consequence appraisal questions inquired participants directly, but not comparatively. For example, Myers and Reynolds's study (2000), asked participants to rate the likelihood of certain events happening to them, compared to fellow students, and repressors reported significantly lower likelihoods. An example question from Myers and Reynolds study (2000) is "Rate the likelihood of being injured in a car accident, compared to fellow students". The question in this current study simply asked "How likely is it that you would experience some negative consequence if you were to engage

in these activities?" (CARE, 1997). It may be that specific wording regarding social comparison causes the repressors to rate the likelihood of consequences or negative events even lower than they would normally.

Another possibility is the fact that the consequence questions in this current study require repressors to simply imagine themselves engaging in negatively perceived activities, and so they can rate the likelihood of negative events occurring to them as likely as nonrepressors would, as if they were responding to a non-direct question format. A third potential reason that repressors did not show a lower bias of consequences in this study is that reporting too low of a likelihood of consequences might suggest that these repressors do not find these activities dangerous and thus might partake in them. Therefore, they would want to give a reasonable rating of likely consequences.

Future studies may find differences in repressors' responses if repressors are asked both direct questions and direct comparative questions. Investigating the reasons why repressors may answer non-comparative direct questions regarding consequences differently from the way in which they answer comparative direct questions regarding consequences may provide important insight into the cognitive processes of the repressor population.

Hypothesis 3: Benefit Appraisals. Repressors rated all likelihoods of receiving benefits from engaging in risky behaviors as significantly lower than non-repressors, with the exception of high-risk sports. Such appraisals were inconsistent with the authors' hypothesis that there would be no significant differences between non-repressors and repressors based on prior research

indicating repressors similar expectancies as nonrepressors for positive events (Myers and Brewin, 1996)

A potential reason for this finding of significantly lower benefits among repressors is that repressors may find low benefits of a behavior to be a more powerful a dissuader against engagement than consequences, in line with their underreporting of frequencies of engagement in risky behaviors. A study in 2006 observed that repressors may avoid threatening health messages by not attending to or recalling the message (Millar, 2003). This study revealed that repressors spent less time reading messages about health detection behaviors than reading messages about promotion behaviors (Millar, 2003). This differed from high anxiety participants, whom were motivated to process self-relevant health information, which can overcome any processing deficit caused by anxiety (Calve & Eysenck, 2000; Sengupta & Venkatarmani, 2001).

Implications from Millar's study (2003) were that health detection messages for repressors should avoid discussing threats of risky behavior but at the same time motivate positive behaviors (Millar, 2003). For repressors, health messages framed in terms of the benefits of performing the behavior instead of the costs (fear appeals) of not performing the behavior would be most helpful (Millar, 2003).

Based on the apparent influence of low perceived likelihood of benefits to dissuade repressors from engaging in risky behaviors, or at least claim low engagement in risky behaviors, a similar setup to health messages should apply to teaching adolescents and young adult repressor about risky behaviors. For

instance, D.A.R.E. (Drug Abuse Resistance Education) is a program that teaches grade school students to avoid the use of drugs. This program highly emphasizes the dangerous consequences that can occur from engaging in such risky activities. Usually this program shows very extreme examples of dangerous situations. D.A.R.E. programs may present videos or presentations on the car accidents caused from drugs or alcohol, and violent injuries or deaths. However, from the information suggested by Millar (2003) about repressors' avoidance of threatening health messages, such drastic examples of consequences provided by D.A.R.E. may not be effective for repressors, a decently sized portion of the population. In order to appeal to the repressor population, it may be helpful to offer messages in a more positive light about what children and adolescents can do to improve their health and live successful lives. This could be done through showing students the benefits of engaging in healthy activities such as extra-curricular sports and clubs, achieving well in school, etc. Information could then be presented on how drugs and alcohol get in the way of living up to one's full potential, demonstrating the low likelihoods of substance and alcohol use in providing them any benefits.

Preliminary data suggest that repressors are good at undertaking health behaviors that they perceive as under their control, such as asthma control, but not for events that they see as beyond their control, such as suffering from diabetes (Myers & Reynolds, 1997). A longitudinal study of over 1000 healthy men also suggests that repressive coping is associated with good self-care behavior, as repressors had significantly lower weight than non-repressors (Niaura et al.,

2003). This fact may have clinical implications for repressors in the realm of self-care, in knowing how to persuade this population to engage in healthy behaviors. It may be more helpful to offer health tips or advice to repressors since they may be better at hearing positive advice rather than negative facts about their health.

Strengths and Limitations

A major strength to this study is that it inquired participants on their participation and general appraisals on a wide range of risky behaviors, some of which, to the authors' knowledge, has not yet been assessed in the repressor population. Topics that are the first to be assessed in the repressor population are risky sexual behaviors, aggressive and illegal behaviors, irresponsible academic/work behaviors, and high-risk sports. Secondly, this study had a relatively large sample size that allowed for stringent cut-off points to be used to define repressors rather than a broader median split, which may not have been as useful in finding the more extreme repressors.

A limitation to this study was the free-range of response choice for participants. Although it was initially perceived by the authors to be helpful in allowing the participants to answer as freely and accurately as they could, it seemed to allow excessive leeway and enable the students to fill in responses other than just the number choice that the authors had expected. Much of the data responses were phrases that referred to vague or subjective amounts (e.g. more than I should; several times; seldom, etc.). Although the meaning of some of these phrases seem to indicate different amounts, the average of the total sample columns were used to replace each of the phrases to prevent skewing the direction

of the data. This may have blunted the results, obscuring more extreme findings. It may be useful for future research to conduct a similar study inquiring participants on their past frequency of risky behaviors with a less free response style. This can be done through a survey system that strictly requires a numeric response. Use of a range for response choices could also prove more effective. A revised CARE assessment (Cognitive Appraisal of Risky Events- Revised) that provides such a range may allow for a more accurate comparison of groups.

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