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Interpersonal Trauma Exposure and Depression in Young Adults: Considering the Role of World Assumptions

Jessica L. Schleider¹, Jacqueline Woerner², Cassie Overstreet³, Ananda B. Amstadter³, Carolyn E. Sartor²

¹Stony Brook University, NY, USA

²Yale University, New Haven, CT, USA

³Virginia Commonwealth University, Richmond, USA

Abstract

The transition to young adulthood confers heightened risk for depression, and exposure to interpersonal trauma (IPT) can magnify this risk. However, not all IPT-exposed young adults develop depressive symptoms, and not all young adults with depressive symptoms report past IPT, suggesting a need to identify moderators of the IPT–depression link. This study investigated whether four different *world assumptions*—core beliefs about the nature of the world—moderated the association between IPT exposure and depressive symptoms in college students ($N = 1,084$, M age = 19.5, 74.1% female). Participants self-reported IPT exposure, depressive symptoms, and world assumptions via an online survey. We predicted that the IPT–depressive symptom association would be weaker among young adults with more positive assumptions about the safety of the world, trustworthiness of people, predictability of people, and controllability of events, versus those with more negative world assumptions in these domains. Hierarchical regression results supported this prediction with respect to one world assumption type: more positive beliefs about the world’s safety significantly attenuated the relation between past IPT exposure and present depressive symptoms, $F(1, 1061) = 9.54$, $R^2 = 0.01$, $p = .002$. The IPT–depressive symptom link was over 3 times as strong for young adults with weak “world-is-safe” assumptions, versus those with strong “world-is-safe” assumptions. No other world assumption types emerged as moderators. Lay theories of the world’s safety may represent a basic, survival-oriented belief with implications for depressive symptoms following safety threats, such as IPT. Addressing “world-is-safe” assumptions may enhance depression prevention efforts for IPT-exposed young adults.

Keywords

violence exposure; mental health and violence; depression; interpersonal violence; world assumptions

Corresponding Author: Jessica L. Schleider, Department of Psychology, Stony Brook University, Psychology B-340, Stony Brook, NY 11794-2500, USA. jessica.schleider@stonybrook.edu.

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Major depressive disorder is the leading cause of disability worldwide (Lopez, Mathers, Ezzati, Jamison, & Murray, 2006), with a lifetime prevalence of 19% in the U.S. population (Kessler & Bromet, 2013). The transition from adolescence into young adulthood carries a heightened risk for the onset of depressive symptoms and disorders (Klein, Torpey, & Bufferd, 2008). During this developmental stage, young adults experience novel academic and social stressors amid newfound autonomy and independence from parental support—particularly relevant for those that transition to and navigate through college. Indeed, more than 50% of young adults experience depressive symptoms during college (Furr, Westefeld, McConnell, & Jenkins, 2001), with over a third of all college students reporting depressive symptoms that impair academic or social functioning (American College Health Association, 2014) and nearly 9% contemplating suicide (Downs & Eisenberg, 2012). Although numerous factors are linked to the onset and maintenance of depression in young adults, substantial evidence links interpersonal trauma (IPT) exposure to depression across adolescence and adulthood (Kaplow & Widom, 2007; Kendler, Gardner, & Prescott, 2003; Kendler, Kuhn, & Prescott, 2004). IPT is defined as “a traumatic event in which an individual is personally assaulted or violated by another human being that is either known or unknown to the trauma survivor,” including both physical and sexual assault (Lilly & Valdez, 2012, p. 140). Large-scale prospective studies suggest a twofold to fivefold increase in risk for depression among IPT-exposed adolescents and young adults (Brown, Cohen, Johnson, & Smailes, 1999; Schraedley, Gotlib, & Hayward, 1999), with IPT conferring substantially greater depression risk than non-IPT (e.g., illness; natural disaster; Breslau, Davis, Andreski, & Peterson, 1991; Fowler, Allen, Oldham, & Frueh, 2013). Among college students, rates of IPT may be higher than those in general adult populations (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995; Kirk & Dollar, 2002), potentially contributing to elevated depression rates during young adulthood.

Despite consistent, positive associations between IPT and depression, only a subset of individuals who experience IPT develops depression, and not all people with depressive symptoms report past IPT (Kendler et al., 2004; Schraedley et al., 1999). Many factors may contribute to variation in the magnitude of the association, including the likelihood that individual difference factors moderate this link. Some such factors have been examined to date. For instance, studies have suggested that the IPT–depressive symptom link may be stronger among college students with insecure (vs. secure) romantic attachment styles (Elwood & Williams, 2007), among adolescents reporting lower (vs. higher) perceived social support and connectedness to others (Holt & Espelage, 2005; Schwerdtfeger Gallus, Shreffler, Merten, & Cox, 2015), and among individuals reporting higher levels of trauma-focused rumination following IPT (Roley et al., 2015). Thus, interpersonal experiences and schemas, individual behaviors, and trauma-specific cognitions may shape the IPT–depression link. In addition to these factors, the potential role of *lay theories*—guiding, common-sense beliefs about intra- and interpersonal phenomena that guide our perceptions, expectations, and behavior (Furnham, 1988)—has remained understudied, despite evidence to suggest their influence. Lay theories span beliefs about relationships, the self, and the world; whether or not they are accurate, they can profoundly shape our reactions to everyday experiences, affecting long-term emotional outcomes and susceptibility to stress (e.g., Rydstedt, Devereux, & Furnham, 2004; Schleider & Schroder, 2018). The goal of this study

was to examine a type of lay theory called *world assumptions* (Janoff-Bulman, 1989)—which may carry particular relevance for IPT-exposed young adults—as potential moderators of the association between IPT and depressive symptoms in college students.

World assumptions are lay theories about the *nature of the world, the self, and the others* (Janoff-Bulman, 1989, 2010), including core beliefs about whether the world is benevolent (defined as whether people are good, kind, and trustworthy; whether the self is worthy; and whether the world is a safe and generally predictable place) and meaningful (defined as whether our outcomes in life are contingent upon personal actions). It has been suggested that optimistic world assumptions may be “shattered” following trauma exposure (as traumatic experiences are difficult to reconcile with optimistic lay theories about the self, the others, and the world; Janoff-Bulman, 1989). Indeed, trauma survivors tend to describe the world as less benevolent and meaningful than those who have not experienced trauma (Janoff-Bulman, 1989), and maladaptive world assumptions have been associated with both trauma exposure severity and depressive symptoms among intimate partner violence survivors (Lilly & Graham-Bermann, 2009).

In addition to Janoff-Bulman’s shattered-assumptions theory (which suggests a *mediational* pathway), cognitive vulnerability–stress models support the notion that negative world assumptions might *moderate* the IPT–depression link. These models propose that one’s characteristic way of attending to and interpreting adversity contributes to vulnerability to maladaptive coping strategies—and, in turn, psychopathology—when negative events occur (e.g., Abramson, Seligman, & Teasdale, 1978; Beck, 1967). One prominent example is Beck’s (1967) cognitive model of depression, wherein dysfunctional attitudes about the self and the world interact with adverse life events to generate hopelessness and depression. Likewise, Foa’s emotional processing theory of post-traumatic stress disorder posits that individuals with rigid (vs. flexible) beliefs about the self, the others, and the world are especially vulnerable to distress following trauma, as the trauma more easily undermines these individuals’ global belief systems (Foa, Huppert, & Cahill, 2006; Foa & Kozak, 1986). Through a similar lens, negative world assumptions may serve as cognitive vulnerabilities for depression, particularly following exposure to IPT. For example, IPT-exposed individuals who view the world as unsafe, people as bad and untrustworthy, and outcomes as beyond their control might engage in maladaptive coping behaviors, such as withdrawal and isolation (to self-protect against a frightening world, uncontrollable outcomes, and unpredictable others; for example, Jeavons & Greenwood, 2007). Such “defeat” responses and avoidance-based coping have been shown to predict depression (Alloy, Kelly, Mineka, & Clements, 1990; Webb, Miles, & Sheeran, 2012).

In contrast, positive world assumptions in the context of IPT might serve as cognitive *protective* factors against problematic coping and depression. IPT-exposed individuals who maintain assumptions that the world is safe, people are good and trustworthy, the self is worthy, and outcomes are controllable may be more likely to cope adaptively. Their sense of control, safety, or interpersonal confidence may allow them to continue engaging with their lives as they did prior to the trauma; such approach-oriented coping strategies have been shown to protect against depression symptoms and disorders (Campbell-Sills, Cohan, & Stein, 2006; Taylor & Stanton, 2007). Thus, individuals with positive world assumptions

despite IPT exposure may show levels of depressive symptoms comparable with their IPT-unexposed peers—that is, resilience to depressive symptoms when exposed to trauma. (However, it is notable that individuals with optimistic world assumptions may still experience adverse trauma responses, particularly under circumstances of low or inconsistent social support; see Janoff-Bulman, 2010). To date, research has identified social support and positive attachment style as protective against psychological distress following IPT (Elwood & Williams, 2007; Holt & Espelage, 2005). In addition to relational factors, world assumptions—reflecting beliefs not only about relations with others but also about the self and the world—may also contribute to the IPT–depression association. However, this possibility has not been empirically explored.

Present Study

The primary aim of this study was to examine world assumptions as potential moderators of the IPT–depressive symptom link in a large, diverse sample of young adults attending college. We hypothesized that the association between IPT exposure and higher depressive symptoms would be weaker in students with more positive world assumptions, as compared with more negative world assumptions, in four domains, originally delineated by Kaler (2009): assumptions regarding safety of the world, the trustworthiness of people, the predictability of people, and the controllability of events. However, some past studies including these constructs have assessed *overall* assumptive worldviews in relation to psychological adjustment (i.e., using a total score including all four world assumption types; Schuler & Boals, 2016), and among studies that have examined these four world assumption types separately, their relations to depression have not been examined (Anders, Frazier, & Shallcross, 2014). Indeed, correlations between depression and these four assumption types have not been assessed in college students. Thus, we had insufficient basis for specific predictions as to whether certain world assumptions would moderate the IPT–depression link more strongly than others.

To date, research on world assumptions has focused on populations with significant trauma histories, such as former prisoners of war (Lahav, Bellin, & Solomon, 2016), survivors of intimate partner violence (Lilly, Howell, & Graham-Bermann, 2015), and individuals who have undergone medical adversity (Ginzburg, 2004). Thus, implications of world assumptions for community populations with variable trauma exposure merit further exploration. Among studies that have examined lay theories in relation to trauma in college students, many have focused specifically on *just-world* beliefs (the assumption that good things happen to good people; for example, Calhoun & Cann, 1994; Reich & Wang, 2015). In the few studies that have examined *world assumptions* and trauma-related outcomes in community young adult samples, Schuler and Boals (2016) found that world assumptions were less positive in trauma-exposed versus unexposed college students, and Anders et al. (2014) observed that diminished world assumptions predicted 2-month increases in general distress. However, depression was assessed in neither of these studies. Harris and Valentinier (2002) found that certain negative world assumptions—specifically about self-worth and the world’s meaningfulness—were positively associated with both sexual assault exposure and depressive symptoms in college students. However, world assumptions were not tested as moderators of the IPT–depression link. Thus, drawing on cognitive vulnerability–stress

models of psychopathology, the present study is the first to test world assumptions as generalizable moderators of the link between IPT and depression: two potentially impairing experiences for which young adults are at heightened risk.

A secondary study aim, designed to enrich existing literatures linking world assumptions, IPT, and depression, was to document potential mean differences in world assumptions by sex (in females and males) and race (White, Black, and Asian) in a community-based young adult sample. Compared with men, women tend to report less positive attributions following stress (Campbell & Henry, 1999; Nolen-Hoeksema & Girgus, 1994), and Black college students tend to report lower perceived control than their White peers (Ahlin & Antunes, 2015; Pearlin, Menaghan, Lieberman, & Mullan, 1981). In addition, IPT is more prevalent among women than men (Tolin & Foa, 2006) and, for certain types of IPT (e.g., domestic violence), among Black adults than White or Asian adults (Roberts, Gilman, Breslau, & Koenen, 2011). Actual differences in likelihood of IPT exposure, or other identity-based stressors such as discrimination, might foster concomitant mean differences in world assumptions by sex and race—including perceptions of whether the world is safe, whether people are trustworthy and predictable, and whether personal outcomes are controllable (Calhoun & Cann, 1994). Mean sex and race differences have been documented for other types of lay theories, such as just-world beliefs (Furnham, 2003). However, these possibilities have not been assessed in prior studies of world assumptions using community samples (e.g., Anders et al., 2014; Schuler & Boals, 2016). We therefore documented possible differences in college students' world assumptions by sex and race. We also included sex and race as covariates in all moderation analyses.

Method

Participants

The sample was drawn from an online survey-based study that recruited 1,422 students at a large, urban university in the southeastern United States. After applying quality control standards (i.e., minimum survey completion time deemed acceptable; long strings of missing data), data from 54 participants were excluded from analyses. Given our interests in relations between world assumptions, IPT exposure, and depressive symptoms experiences in young adults, as well as sex and race difference in world assumptions, the sample was limited to individuals between ages 18 and 25 years ($M = 19.50$, $SD = 1.69$) and to the three racial categories most highly represented in the data set. The final sample consisted of 1,084 participants (74.1% identified as female sex); 27.1% self-identified as Black, 19.2% as Asian, and 53.7% as White. Additional descriptive information is provided in Table 1.

Procedures

All procedures were approved by the Virginia Commonwealth University Institutional Review Board prior to subject recruitment. Undergraduate students were recruited through SONA, a university-based research participation system. Eligible and interested students were invited to participate in a web-based survey of “stress, personality, and mental health.” All students who were 18 years of age or older, and who were able to complete an online survey in English, were eligible to participate. Participants received a description of the

study and procedures; informed consent was provided electronically, via the Qualtrics survey administration platform. Participants were compensated with one research credit that could be applied toward an eligible psychology course.

Measures

IPT exposure.—Lifetime history of IPT exposure, here classified as lifetime history of experiencing physical assault and/or sexual assault, were assessed using the Life Events Checklist (LEC; Gray, Litz, Hsu, & Lombardo, 2004) and coded dichotomously as present or absent. Endorsement of personally experiencing either of the following events qualified for a history of physical assault: (a) physical assault or (b) assault with a weapon. Endorsement of experiencing (a) sexual assault or (b) any other unwanted or uncomfortable sexual experience qualified as a history of sexual assault.

Due to the high degree of overlap between physical and sexual assault exposure in this sample (nearly one third of students who reported experiencing one trauma type also reported experiencing the other), and the fact that we did not have theoretically driven reasons to expect differences in moderated effects by IPT type, we chose to collapse the experience of both trauma types (physical and sexual) into a single IPT variable for all moderation analyses in this study.

Depressive symptoms.—Depressive symptoms were assessed with the Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001) that asks respondents to rate the frequency with which they have been bothered by nine different depressive symptoms over the past 2 weeks (e.g., Little interest or pleasure in doing things; Feeling down, depressed, or hopeless). Response options range from 1 (*not at all*) to 4 (*nearly every day*). The PHQ-9 has shown strong internal consistency, test–retest reliability, and acceptability in clinical and community adult samples and high sensitivity in distinguishing depressive symptom severity levels (Gilbody, Richards, Brealey, & Hewitt, 2007). Higher summed scores represented greater depressive symptom severity ($\alpha = .90$).

World assumptions.—World assumptions were assessed with the 22-item World Assumptions Questionnaire (WAQ; Kaler, 2009). This measure consists of four subscales. Controllability of Events (CE) consists of five items (e.g., “I have a great deal of control over what will happen to me in my life”; $\alpha = .69$). Comprehensibility and Predictability of People (CPP) consists of five items (e.g., “People often behave in unpredictable ways”; $\alpha = .76$). Trustworthiness and Goodness of People (TGP) consists of six items (e.g., “Other people are usually trustworthy”; $\alpha = .73$). Safety and Vulnerability (SV) consists of six items (e.g., “Terrible things might happen to me”; $\alpha = .62$). Participants endorsed their agreement with each statement on a scale from 1 (*strongly agree*) to 6 (*strongly disagree*). Separate scores were created for each of the four subscales, with higher values indicating more positive world assumptions. Previous work has demonstrated acceptable discriminant and construct validity, internal consistencies (range = .74–.82), and test–retest reliability (range = .68–.74) for each of the WAQ subscales (Anders et al., 2014; Freh, Chung, & Dallos, 2013; Kaler, 2009). The WAQ subscales have shown acceptable psychometric properties in prior

studies using community, young adult samples (Anders et al., 2014), and the four-factor structure has shown adequate model fit (Kaler, 2009).

Notably, we used the WAQ rather than the more widely used World Assumptions Scale (WAS; Janoff-Bulman, 1989) in this study due to psychometric limitations of the WAS, including low construct validity (e.g., non-significant associations with trauma exposure); an inconsistent factor structure; and low reliability (alphas below .60; Kaler et al., 2008). Kaler and colleagues (2008) suggested that limitations in the WAS may account for inconsistencies in the world assumptions literature to date. The WAQ (Kaler, 2009) was developed to address the need for a psychometrically superior alternative to the WAS.

Data Analyses

Missing data.—If a participant's responses were missing more than 20% of the items for a given measure, the participant's score for that measure was excluded from the analysis. If a participant's responses were missing 20% or fewer items on a measure, the mean of responses to available items was imputed (mean-scored) for missing values. PHQ scores were excluded for 2.07% of participants and imputed for 1.80% of study participants; WAQ scores for one or more subscales were excluded for 0.90% of participants and imputed for 5.48% of participants. Depression scores did not vary on missingness by IPT status or WAQ subscales.

Descriptive statistics.—We first evaluated associations between IPT exposure, depressive symptoms, and world assumption subtypes using zero-order correlations. Next, we assessed potential differences in world assumptions by race (White, Black, Asian) via one-way ANOVA, and by sex (male, female) using independent-samples *t* tests. We also tested for race and sex differences in depressive symptoms and IPT, overall and by subtype (i.e., physical or sexual). Regardless of whether race and sex differences emerged in primary study variables, both were included as covariates in subsequent moderation tests.

Moderation analyses.—We then conducted four hierarchical linear regressions, with depressive symptoms ratings (PHQ-9) as the dependent variable, to test hypothesized moderation effects (variables were centered prior to analyses to decrease collinearity). In Step 1 of these regressions, IPT exposure and all four WA subscales were entered as independent variables, along with sex and race as covariates. In Step 2, we included an interaction term between IPT and one of the four WAQ subscales (one interaction term per regression). A significant change in R^2 from Step 1 to Step 2 is indicative of moderation (Howell, 2002).

For significant moderation effects, we used the PROCESS macro for SPSS (Hayes, 2013) to calculate simple slopes for the association between IPT exposure and depressive symptoms for low (-1 *SD* below the mean), average (mean), and high ($+1$ *SD* above the mean) levels of the moderator, using bootstrapping procedures with 2,000 samples.

Results

Descriptives and Correlations

Means and standard deviations for world assumptions subscales and depressive symptoms, as well as percentage of the sample reporting IPT exposure, are presented in Table 1, both for the full sample and by sex and race. Overall, 41.91% of the sample reported experiencing IPT, and 30.90% reported a PHQ-9 score at or above 10: a widely used cutoff score to screen for major depression in primary care settings (Manea, Gilbody, & McMillan, 2012).

Depressive symptom severity did not significantly differ as a function of sex or race. Rates of overall IPT exposure were higher for women than for men, $\chi^2(1, 1074) = 6.06, p = .021, d = .14$, and differed significantly by race, $\chi^2(2, 1081) = 14.91, p = .001, d = .20$, with exposure reported most frequently by White students. Regarding subtypes of IPT, a history of experiencing physical assault was reported by 23.77% of the total sample, and a history of experiencing sexual assault by 29.69% of the total sample (Table 1 presents rates of exposure to IPT subtypes by sex and race). Among individuals reporting any IPT history, 27.88% reported experiencing both physical and sexual assault; these individuals comprised 11.66% of the total sample.

Some sex and race differences emerged in mean levels of world assumptions. Compared with men, women reported lower perceived controllability of events, $t(1049) = 2.41, p = .020, d = .16$, and predictability of people, $t(1049) = 2.61, p = .013, d = .18$. World assumptions regarding the safety of the world and the trustworthiness of people did not differ significantly by sex. Regarding differences by race, a one-way ANOVA revealed an overall effect of race on assumptions regarding the predictability of people, $F(2, 73.08) = 4.31, p = .011, \eta^2 = .02$, and the trustworthiness of people, $F(2, 198.58) = 10.52, p < .001, \eta^2 = .01$. Post hoc comparisons using a Bonferroni correction showed that Black students reported lower assumptions in both of these domains, as compared with White students, for assumptions regarding the predictability of people, $M(SD) = 15.07 (3.93)$ for White students and $M(SD) = 14.20 (4.26)$ for Black students, and for assumptions regarding the trustworthiness of people, $M(SD) = 21.52 (4.32)$ for White students and $M(SD) = 20.12 (4.30)$ for Black students. No other differences emerged in world assumptions as a function of race.

Zero-order and point-serial correlations among world assumptions, depressive symptoms, and IPT exposure are reported in Table 2. Correlations were generally in the anticipated directions: depressive symptoms correlated positively with IPT exposure, and both depression and IPT exposure were linked with more negative assumptions regarding the world's safety, people's trustworthiness, and the controllability of events. However, the world assumptions about the predictability of people were not significantly associated with depression or IPT exposure. The four world assumption types showed significant, low to moderate correlations with one another ($r_s = .11-.39$), suggesting low risk of multicollinearity. To further investigate potential multicollinearity concerns, we examined variance inflation factors (VIFs) within a multiple linear regression model including all four WAQ subscales, IPT exposure, sex, and race (two binary variables indicating Black and Asian race, respectively); depressive symptom severity was the dependent variable. VIFs

ranged from 1.03 to 1.29 for all variables, indicating acceptable (low) levels of multicollinearity.

Moderation by World Assumptions

We first examined the distribution of the dependent variable (depressive symptoms) to confirm the appropriateness of regression-based moderation analyses, which assume an approximately normal distribution. A normal P-P plot of PHQ-9 scores indicated an approximately normal distribution (see Figure 1). Thus, we proceeded with moderation tests as planned.

The IPT $\times$ WA-SV interaction produced a significant change in R^2 for total depressive symptoms, $F(1, 1061) = 9.54$, $R^2 = 0.01$, $p = .002$. Figure 2 illustrates the simple effects (regression lines) for this pattern; full regression results are presented in Table 3. We next examined the slope of associations between IPT and depression at different levels of “world-is-safe” assumption. The IPT–depression link was significant for weak and average levels of “world-is-safe” assumptions but was nonsignificant for strong levels; furthermore, this association grew gradually weaker as assumptions about the world’s safety became more positive. Specifically, the IPT–depression association was over 3 times as large for individuals with weak “world-is-safe” assumptions ($\beta = 3.19$, $t = 6.29$, $p < .001$, 95% confidence interval (CI) = [2.19, 4.19]), as compared with those with strong “world-is-safe” assumptions ($\beta = 0.95$, $t = 1.82$, $p = .069$, 95% CI = [−0.76, 1.98]); likewise, the association was over 50% larger for individuals with average “world-is-safe” assumptions ($\beta = 2.07$, $t = 5.64$, $p < .001$, 95% CI = [1.35, 2.79]) as compared with those with strong “world-is-safe” assumptions. Moreover, the association between “world-is-safe” beliefs and depression was significant and negative among IPT-exposed individuals ($\beta = -0.18$, $t = -2.22$, $p < .027$, 95% CI = [−0.33, −0.02]) but non-significant among individuals who did not report IPT exposure ($\beta = 0.09$, $t = 1.38$, $p = .169$, 95% CI = [−0.04, 0.23]). Regarding the roles of sex and race, neither participant sex nor race showed significant associations with depressive symptoms after accounting for the effects of “world is safe” assumptions, IPT exposure, and their interaction.

No other types of world assumptions (trustworthiness of people; predictability of people; controllability of events) emerged as significant moderators of the association between IPT and depressive symptoms. Full regression results for all models are presented in Table 3. Across all of these models, associations of sex and race with depressive symptoms were non-significant after accounting for the effects of world assumptions, IPT exposure, and their interaction.

Discussion

The present study was the first to investigate whether four different *world assumptions* moderated the association between IPT exposure and depressive symptoms in a large sample of young adults attending college. We predicted that the IPT–depressive symptom severity link would be weaker among those with more positive assumptions about the safety of the world, the trustworthiness of people, the predictability of people, and the controllability of events, as compared to those with more negative world assumptions in these four domains.

Results supported this prediction with regard to a specific kind of world assumption: Stronger world-is-safe assumptions attenuated the link between IPT exposure and depressive symptoms. Furthermore, the association between world-is-safe assumptions and depressive symptoms was significant and negative among IPT-exposed individuals only; safety assumptions were not significantly linked to depressive symptoms in those reporting no IPT history. No evidence emerged for moderating roles of other world assumption types.

IPT and Depression: Why Did Safety Beliefs Matter?

This study is the first to identify core assumptions about the world's safety as a meaningful individual difference factor in the IPT–depressive symptom link. Findings build on a large body of evidence supporting the cognitive vulnerability–stress model of depression (Abramson et al., 1978; Beck, 1967), which suggests that one's characteristic interpretative lens shapes resilience or susceptibility to depression in the face of stress. However, prior studies have not identified assumptions about the world's safety, in particular, as a potential cognitive vulnerability factor for depression in the face of IPT. In fact, the moderating effect of safety assumptions (but no other world assumption type) aligns with decades of work linking basic human needs for safety and security with psychological well-being, beginning with seminal research by Maslow (1954).

Specifically, Maslow proposed a five-category classification for basic human needs, in order from least to most fundamental: physiological, safety and security, belongingness, esteem, and self-actualization. Maslow theorized that the lower order needs were more powerful (prepotent) than the higher order needs, with regard to functioning: that is, low-level needs are necessary (but not sufficient) for psychological health. Indeed, numerous studies have shown that both actual and perceived threats to physiological, safety, and security needs relate to higher depressive symptom severity, both cross-sectionally (Ziersch, Baum, MacDougall, & Putland, 2005) and over time (Ozer & Weinstein, 2004). Furthermore, some research shows that interpersonal factors (e.g., connectedness with others) show no significant links to depressive symptoms after accounting for the effects of perceived threats to safety (Ziersch et al., 2005). Thus, safety beliefs might reflect a more basic, survival-oriented world assumption, whereas other world assumptions reflect higher order needs (e.g., belongingness; esteem). Accordingly, safety assumptions might play a meaningful role in shaping the effect of IPT—in many cases, a direct threat to safety and security—on depressive symptoms. The present study lends initial support to this possibility within a community young adult sample.

It is notable that safety beliefs were the only world assumption type to moderate the IPT–depression association. Correlations among WAQ subscales were small to moderate in this study ($r_s = .11-.39$), suggesting that they may capture associated but distinct constructs. Factor analytic research on the WAQ supports this possibility (Kaler, 2009). The four assumption types may therefore relate differently to mental health and associated outcomes. Indeed, in this study, beliefs about the controllability and predictability of people showed *no* significant links with IPT or depressive symptoms; similarly, Kaler (2009) found that links between WAQ subscales, symptoms, and affect-related variables ranged widely by assumption type. Because past research using the WAQ has used total “assumptive world

scores” (Schuler & Boals, 2016) or focused on outcomes other than mental health symptoms (Anders et al., 2014; Freh et al., 2013), additional studies are needed to ascertain *patterns* of differential links of assumption types to symptoms and adversity, as originally noted by Janoff-Bulman (1989). As one example, perhaps socially oriented assumptions—for example, beliefs about the trustworthiness and goodness of people—might influence responses to interpersonal stress (e.g., social or romantic rejection; loneliness) more strongly than other assumption types. Future studies examining world assumptions in relation to diverse stressors and symptoms may test this possibility.

Implications for Prevention and Intervention

If replicated in future studies, results may suggest novel additions to psychosocial interventions designed to prevent or reduce depression in IPT-exposed young adults. Cognitive-behavioral therapy (CBT), a gold-standard depression prevention and treatment approach (Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012), involves identifying and correcting one’s inaccurate, negative beliefs—particularly beliefs relevant to the *self* (e.g., views of the self as inherently unlovable or worthless; convictions that one’s difficulties will never improve). In addition to these self-focused beliefs, inaccurate assumptions about the *world’s safety* may be helpful to address among IPT-exposed individuals. World safety assumptions are not a traditional focus in CBT for depression; however, these assumptions often grow more negative following IPT exposure (Lilly & Graham-Bermann, 2009; Schuler & Boals, 2016), and the present findings support their links to depressive symptoms in the face of IPT. Thus, for IPT-exposed young adults, directly evaluating and correcting overly negative, inaccurate beliefs about the world’s safety may be a valuable addition to existing CBT prevention and intervention programs. Future studies and prevention trials are needed to gauge the promise of this approach.

Given the dynamic nature of one’s environment across the life-course, additional relevant questions involve the changeability and malleability of safety beliefs themselves. Specifically, do world assumptions tend to change with one’s environment (e.g., transitions to more or less safe environments), or are they relatively stable entities? Relatedly, might *flexibility* of one’s safety beliefs represent an individual difference factor, indexing resilience to shifting contextual demands—similar to *cognitive and emotional flexibility*, which predict adaptive responses to stress (Kashdan & Rottenberg, 2010)? Finally, to what degree are safety beliefs modifiable through intervention? Given that overall world assumptions have been shown to decline following traumatic experiences (Schuler & Boals, 2016), it seems plausible that they might be strengthened through targeted interventions. Longitudinal, experimental, and intervention studies will help parse the degree to which safety beliefs are dynamic, impacts of safety belief flexibility on stress-coping, and the promise of safety beliefs as a modifiable intervention target.

Considering Context: Assumption–Environment Fit, Race, and Sex

An outstanding question, with relevance for intervention applications, involves the notion of *assumption–environment fit*: Do “world-is-unsafe” assumptions relate differently to depression as a function of the *actual safety* of one’s environment? For instance, a moderate-to-low “world-is-unsafe” assumption might benefit someone living in a high-crime

neighborhood, promoting behaviors that reduce victimization risk. Those same “world-is-unsafe” assumptions could create difficulties for individuals in safe environments, causing unwarranted helplessness and withdrawal. Thus, equivalent “world-is-safe” assumptions may be more or less adaptive depending on the fit of those beliefs to one’s environment. Such a pattern may be pertinent to assess among IPT-exposed individuals, who often face *decreases* in environmental safety over time (e.g., due to interpersonal resource loss and social network depletion following IPT; Finkelhor, Hotaling, Lewis, & Smith, 1990; Schumm, Hobfoll, & Keogh, 2004). Participants in this study were all students at the same university (i.e., in equivalent or very similar environments), preventing us from examining this possibility. Future studies targeting populations with more variability in living circumstances and contexts are needed to assess questions of assumption–environment fit—including differentiating levels of safety assumptions that are adaptive in different (e.g., more vs. less safe) environments. Such studies may help guide depression prevention and treatment efforts targeting IPT-exposed young adults. If safety assumptions relate differently to depressive symptoms by context, then the promotion of healthy safety assumptions may require individual tailoring based on circumstances, realities, and experiences.

In considering the role of context, it is notable that some race and sex differences emerged in mean levels of world assumptions. Compared with men, women reported lower perceived controllability of events and predictability of people, and Black students reported lower assumptions regarding the predictability and trustworthiness of people than did White students. These differences fit with prior research documenting sex and race differences in other types of lay theories (e.g., just world beliefs: Furnham, 2003; and lay theories about the malleability of emotions and behavior, Schleider & Weisz, 2016b), with women and members of minority groups reporting less positive beliefs overall—which may, in part, reflect race and sex disparities in social-structural access to power, privilege, and material resources. More women than men reported IPT exposure in this study, suggesting a potential role of trauma exposure in mean differences in certain world assumptions by sex. At the same time, a greater proportion of White students than Black students reported IPT exposure in this study (despite Black students’ more negative assumptions about people’s trustworthiness and predictability), and no race or sex differences emerged in assumptions about safety or event controllability. Thus, additional research is needed to examine the circumstances under which particular world assumptions might differ by sex or race—perhaps as a function of contextual factors not assessed here, such as identity-based discrimination or community belongingness.

Limitations

The present study has several limitations. First, as in many studies including trauma history assessments, IPT exposure was assessed retrospectively using a brief, checklist-based measure. Thus, information was not available regarding trauma timing, chronicity, and severity, which may be relevant to the impact of trauma on world assumptions, and resulting effects on depressive symptoms. Second, the study’s cross-sectional design prevents directional conclusions. For example, it remains possible that higher depressive symptoms might predict future declines in positive world assumptions, as has been observed in studies of depression and other lay theory types (Schleider & Weisz, 2016a), or that depressive

symptoms and negative world assumptions might exert bidirectional influences on one another. Prospective studies are needed to ascertain this possibility. Third, this study examined one of several potential moderators of the IPT–depression association. Indeed, this association is likely multiply determined, affected by cognitive and interpersonal factors not examined here (or in prior studies). Present results add to a still-emerging body of research on various contributors to relations between IPT and depression. They are the first to suggest that a specific world assumption type may meaningfully contribute to this link. However, additional studies are needed to examine the relative and combined roles of person-level factors (such as world assumptions) and relational factors (social support, attachment) in relations between IPT and depression.

Summary and Future Directions

Despite these limitations, the present study advances prior work by identifying a particular type of world assumption, regarding the *safety of the world*, as a moderator of the association between IPT and depressive symptom severity in a large, community sample of young adults. Specifically, the IPT–depressive symptom link was more than 3 times as strong for young adults with weak “world-is-safe” assumptions, versus those with strong “world-is-safe” assumptions, for whom the link was nonsignificant. Although the relationship between IPT and depression is likely shaped by multiple factors, including attachment and social support (see Janoff-Bulman, 1989), this study is the first to identify “world-is-safe” assumptions as a meaningful factor to consider. Lay theories of the world’s safety may reflect an especially basic, survival-oriented world assumption type: one with strong links to depressive symptoms in the context of safety and security threats, such as IPT. Consequently, evaluating “world-is-safe” assumptions, and fostering healthy assumptions appropriate to one’s environment, may enhance efforts to prevent and reduce depression in IPT-exposed young adults. To gauge the promise of this approach, future research should assess the dynamic (vs. stable) nature of safety beliefs in the face of environmental change, relations of these changes in depressive symptoms, and the modifiability of safety beliefs through targeted intervention. Additional work may assess robustness of the observed moderation effect in prospective studies, explore the independent and combined effects of world assumptions and relational factors on the IPT–depression link, and focus on young adult populations representing diverse backgrounds, experiences, and contexts.

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Author Biographies

Jessica L. Schleider is an assistant professor in the Department of Psychology (Clinical Area) at Stony Brook University. She received her PhD in clinical psychology at Harvard University. The overall goal of her research program is to develop scalable, accessible

interventions for youth depression and anxiety; identify mechanisms of change underlying their effects; and test novel approaches to their dissemination.

Jacqueline Woerner received her PhD in social psychology from Wayne State University, and is currently a postdoctoral fellow at Yale University. The goal of her research is to understand the mechanisms by which interpersonal violence victimization disrupts social functioning and predicts health risk behaviors. She is also interested in the etiology of violence perpetration, including the ways in which alcohol intoxication and normative influence facilitate aggression.

Cassie Overstreet is a doctoral candidate in clinical psychology at Virginia Commonwealth University. She will be completing her pre-doctoral internship at the Charleston Consortium (Traumatic Stress Track). Her broad research interests focus on the impact of genetic and environmental influences on post-trauma psychopathology, specifically posttraumatic stress disorder and nonmedical use of prescription drugs.

Ananda B. Amstadter is a tenured associate professor of psychiatry, psychology and human and molecular genetics at Virginia Commonwealth University. Her program of research focuses on the identification of biologic and psychosocial factors that are involved in risk and resilience for psychopathology post trauma.

Carolyn E. Sartor is an associate professor in the Department of Psychiatry at Yale University School of Medicine. Her research centers around the refinement of etiological models of substance use disorders to reflect variability by gender and race/ethnicity in the relative contributions of psychiatric, psychosocial, genetic, and socio-environmental risk and protective factors. Characterization of the role of childhood trauma in the development of early and problem substance use is a core aim of her research program.

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Figure 1.
Normal Q-Q plot displaying distribution of depressive symptoms (PHQ-9 scores).
Note. PHQ-9 = Patient Health Questionnaire 9.

Figure 2.
World is Safe belief moderates the relation between interpersonal trauma exposure and depressive symptom severity.

Table 1.

Descriptive Statistics by Sex, and by Race.

Variable Name	<i>M (SD)</i>					
	Full Sample (<i>n</i> = 1,081)	Male (<i>n</i> = 276)	Female (<i>n</i> = 798)	White (<i>n</i> = 581)	Asian (<i>n</i> = 206)	Black (<i>n</i> = 294)
WAQ: Controllability of Events (range: 5–30)	19.22 (3.75)	19.71 (3.72)	19.08 (3.75)	19.20 (3.81)	19.32 (3.57)	19.20 (3.76)
WAQ: Controllability and Predictability of People (possible range: 5–30)	14.76 (4.13)	15.32 (4.16)	14.55 (4.11)	15.07 (3.93)	14.67 (4.41)	14.20 (4.26)
WAQ: Trustworthiness and Goodness of People (possible range: 6–36)	20.97 (4.38)	21.13 (4.23)	20.93 (4.44)	21.52 (4.32)	20.66 (4.47)	20.12 (4.30)
WAQ: Safety (vs. Vulnerability) (possible range: 6–36)	14.90 (3.78)	15.10 (3.93)	14.83 (3.72)	14.90 (3.64)	14.92 (4.01)	14.88 (3.84)
PHQ-9: Depressive Symptoms (possible range: 0–27)	7.90 (6.35)	7.25 (6.62)	8.07 (6.22)	7.89 (6.34)	8.31 (6.62)	7.64 (6.19)
Interpersonal trauma exposure (binary)	41.91%	35.50%	43.99%	46.99%	39.32%	33.67%
Physical assault exposure (binary)	23.77%	29.71%	21.68%	24.61%	24.76%	21.43%
Sexual assault exposure (binary)	29.69%	13.77%	34.96%	35.29%	26.70%	20.75%

Note. WAQ = World Assumptions Questionnaire; PHQ-9 = Patient Health Questionnaire 9.

Table 2.

Bivariate Correlations for Full Sample.

Variable Name	2	3	4	5	6
1. WAQ: Controllability of Events	.13**	.24**	.11**	-.28**	-.08**
2. WAQ: Controllability and Predictability of People	—	.26**	.39**	-.06	.01
3. WAQ: Trustworthiness and Goodness of People		—	.30**	-.25**	.11**
4. WAQ: Safety (vs. Vulnerability)			—	.11**	-.15**
5. PHQ-9: Depressive Symptoms				—	.26**
6. Interpersonal trauma exposure (binary; point-serial correlations displayed)					—

Note. WAQ = World Assumptions Questionnaire; PHQ-9 = Patient Health Questionnaire 9.

**
 $p < .01$.

Table 3.

Full Regression Results, WAQ Subscale $\times$ IPT Interactions.

World Is Safe Assumption (WAQ-SV)		Events Are Controllable Assumption (WAQ-CI)		People Are Trustworthy Assumption (WAQ-TGP)		People Are Predictable Assumption (WAQ-CPP)		
DV		DV		DV		DV		
Depressive Symptom Severity		Depressive Symptom Severity		Depressive Symptom Severity		Depressive Symptom Severity		
Predictor (Step 2 Interaction Variable)	β	R^2	Predictor (Step 2 Variable)	β	R^2	Predictor (Step 2 Variable)	β	R^2
Step 1		.15**	Step 1		.15**	Step 1		.15**
WAQ-SV	.10		WAQ-SV	-.03		WAQ-SV	-.02	
WAQ-CE	-.37**		WAQ-CE	-.32**		WAQ-CE	-.36**	
WAQ-TGP	-.28**		WAQ-TGP	-.28**		WAQ-TGP	-.28**	
WAQ-CCP	.03		WAQ-CCP	.04		WAQ-CCP	.04	
IPT exposure	6.30**		IPT exposure	3.99*		IPT exposure	2.01*	
Female	.48		Female	.52		Female	.53	
Black	-.39		Black	-.44		Black	-.44	
Asian	.41		Asian	.33		Asian	.31	
Step 2		.01**	Step 2		.00	Step 2		.00
WAQ-SV $\times$ IPT	-.30**		WAQ-CE $\times$ IPT	-.09		WAQ-TGP $\times$ IPT	-.10	
						WAQ-CPP $\times$ IPT	.01	

Note. Outcome variable is PHQ-9 score (Depressive Symptoms) for all models. Regression coefficients are unstandardized. "Female" variable coded as Female = 1, Male = 0; "Black" variable coded as Black = 1, non-Black = 0; "Asian" variable coded as Asian = 1, non-Asian = 0. WAQ = World Assumptions Questionnaire; PHQ-9 = Patient Health Questionnaire 9; IPT = Interpersonal trauma; SV = Safety and Vulnerability; CE = Controllability of Events; TGP = Trustworthiness and Goodness of People; CPP = Comprehensibility and Predictability of People; DV = dependent variable.

* $p < .05$.

** $p < .01$.