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Inferential Style, School Teachers, and Depressive Symptoms in College Students

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Depressive symptoms affect around half of students at some point during college. According to the hopelessness theory of depression, making negative inferences about stressful events is a vulnerability for developing depression. Negative and socio-emotional teaching behavior can be stressors that are associated with depression in school students. First-time college freshmen completed the Cognitive Style Questionnaire (CSQ), Teaching Behavior Questionnaire (TBQ), and Center for Epidemiological Studies Depression Scale (CES-D). While completing the TBQ, participants reported on a teacher from prior education to college. Multiple regression analysis found significant effects of the independent variables (four teaching behavior types, inferential style, and interactions between the four teaching behavior types and inferential style) on the dependent variable (depressive symptoms). More specifically, negative and socio-emotional teaching behavior were positively associated with depressive symptoms and instructional and organizational teaching behavior were negatively associated with depressive symptoms. Both organizational and negative teaching behavior interacted significantly with inferential style. Organizational and negative teaching behavior shared different relationships with depressive symptoms depending upon an individual's level of inferential style. Promotion of instructional and organizational teaching behavior in school as well as the reduction of negative teaching behavior may be useful in reducing students' depressive symptoms.

Keywords: depressive symptoms; teaching behavior; inferential style; college students; weakest link

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Introduction

Teaching behavior has an influence on academic (Perry, Donohue & Weinstein, 2007), psychosocial (Perry et al., 2007), and mental health outcomes including depressive symptoms (Pittard, Pössel, & Smith, 2015; Pössel, Rudasill, Adelson, Bjerg, Wooldridge, & Winkeljohn Black, 2013; Pössel, Rudasill, Sawyer, Spence, & Bjerg, 2013). It is important to consider teaching behavior as a possible stressor for school students, as they are with teachers for most of the day, every day, totaling about 15,000 hours in elementary, middle, and high school (Rutter, 1982). However, support for the relationship between teaching behavior and mental health outcomes is inconsistent (Pittard et al., 2015; Pössel, Rudasill, Adelson et al., 2013; Pössel, Rudasill, Sawyer et al., 2013). Conceptualizing previous findings within a vulnerability-stress model like the hopelessness theory of depression (Abramson et al., 1989) could help explain these inconsistencies. Thus, for school students with a negative inferential style, some types of teaching behavior may be stressors, interacting with the existing negative inferential style to trigger depressive symptoms-

It is important to consider the mental health of college-aged students, as depressive symptoms affect almost 50% of students at some point during college (Furr, Westfeld, McConnell, & Jenkins, 2001; Smith et al., 2001). In a nationwide survey, 31.3% of students reported that they had felt “so depressed that it was difficult to function” at some point during the previous 12 months and 12.6% reported that depression had interfered with their academics (ACHA, 2013, pp. 14). Further, depression is associated with a decrease in grade point average (e.g. Deroma, Leach, & Leverett, 2009) and leaving school (Arria et al., 2013). Even mild depression can have a significant influence on academic performance, and is as impairing as moderate or severe depression (Deroma et al., 2009).

Hopelessness Theory of Depression

Abramson et al. (1989) proposed the hopelessness theory of depression, a vulnerability-stress model, to explain the development and maintenance of a subtype of depression known as hopelessness depression. Based on that model, making negative inferences, or conclusions, about stressful events is a vulnerability for developing hopelessness which leads to hopelessness depression (Abramson et al., 1989). Abramson et al. (1989) describe three inferential styles. The first includes making inferences about the cause of a stressful event, referring to when an individual attributes the stressful event to a cause that is stable, global, and/or internal. The second inferential style includes making inferences about the consequences of a stressful event, which involves inferring that the consequences of the stressful event will be dire (Abramson et al., 1989). The third inferential style includes making inferences about the self, given the experience of the stressful event, particularly, inferences of negative characteristics about the self because of the stressful event (Abramson et al., 1989).

One way to conceptualize the association between the different inferential styles and hopelessness depression is described in the weakest link hypothesis. The weakest link hypothesis states that individuals are as vulnerable to developing hopelessness depression as their most negative inferential style (Abela & Sarin, 2002). To be more precise, Abela and Sarin (2002) argue that the weakest inference is the most accurate representation of an individual's inferential style. If an individual scores highly on one inferential style,

indicating the worst or most negative inferential style, but scores low on the remaining two styles, this most negative inferential style reflects the real vulnerability of the individual and represents the highest risk to develop hopelessness depression (Abela & Sarin, 2002). Haefffel's (2010) and Abela et al. (2006) used the weakest link approach when examining significant interaction between stressful events and inferential style, which predicted depressive symptoms in college students and an adult clinical sample, respectively.

Teaching Behaviors as Stressful Events for School Students

Considering that minors spend much of their time with teachers, teaching behavior could be a relevant stressor and interact with cognitive vulnerabilities. Thus, stressful teaching behavior may interact with a preexisting negative inferential style, resulting in hopelessness depression in students. Specific types of teaching behavior include negative, socio-emotional, instructional, and organizational teaching behavior (Douglas, 2009; Pianta & Hamre, 2009; Pössel, Rudasill, Adelson et al., 2013). These teaching behavior types and previous findings to their relationships with depressive symptoms are described below.

Negative teaching behavior refers to the behaviors that students perceive as unpleasant and that are counter-productive (Pössel, Rudasill, Adelson et al., 2013). These behaviors include the teacher being easy to provoke, inconsistent behavior, or threatening to punish students (Pössel, Rudasill, Adelson et al., 2013). In high school students, negative teaching behavior is positively associated with general depressive symptoms (Pittard et al., 2015). Thus, if replicated, negative teaching behavior will likely have a main effect on general depressive symptoms in students. However, beyond that it is possible that negative teaching behavior could be especially problematic for students with a negative inferential style, functioning as a stressor in the hopelessness theory of depression. In other words, for students with negative inferential styles, having a teacher who demonstrates negative teaching behavior could contribute to hopelessness depression symptoms.

Teachers demonstrate socio-emotional teaching behavior when they are being responsive and warm in their interactions with students. Socio-emotional teaching behavior can occur at any time, and helps increase students' feelings of acceptance or belongingness in the classroom. Pittard et al. (2015) found no significant association between socio-emotional teaching behavior and general depressive symptoms in high school students. The lack of a relationship found between socio-emotional teaching behavior and general depressive symptoms could be simply interpreted as a lack of association between both variables. However, a previous study of high school students (Pössel, Rudasill, Sawyer et al., 2013) found that emotional support from teachers, a part of socio-emotional teaching behavior, was associated with different outcomes regarding general depressive symptoms for students experiencing different levels of stress. Thus, one could imagine that socio-emotional teaching behavior could be related to differing outcomes for students with more negative inferential styles, compared to students with less negative inferential styles.

For example, socio-emotional teaching behavior includes talking with students about school or non-school related problems (Pössel, Rudasill, Adelson et al. 2013). Talking about problems and negative emotions with students could interact with a preexisting negative inferential style. However, talking about problems and negative emotions with teachers cannot interact with a negative inferential style if such negative inferential style does not exist in a student. It is possible that some students (with a more negative inferential

style) experience a socio-emotional teaching behavior as stressor while other students (with a less negative inferential style) do not experience this type of teaching behavior as stressor. Summarized, it is possible that while socio-emotional teaching behavior does not have a main effect on depressive symptoms in students (Pittard et al., 2015), it may interact with a negative inferential style to trigger hopelessness depression symptoms.

Instructional teaching behavior occurs when teachers are delivering instruction to students, allowing them to answer questions and receive positive feedback. Instructional teaching behavior promotes both the students' understanding of concepts and provides a space for skill development (Pianta, LaParo, & Hamre, 2008). This type of teaching behavior is not associated with general depressive symptoms in high school students (Pittard et al., 2015). As instructional teaching behavior is likely not a stressor for students, it would not explain hopelessness depression symptoms when interacting with a negative inferential style, which requires an interaction with a stressor (Abramson et al., 1989).

Organizational teaching behavior is related to classroom management, and refers to helping students understand the rules of the classroom and why they are important (Pianta & Hamre, 2009). Organizational teaching behavior also includes the teacher minimizing disruptions in the classroom, establishing smooth transitions from activity to activity, and other processes that help to operate the classroom more efficiently (Pianta & Hamre, 2009). Organizational teaching behavior is not associated with general depressive symptoms in high school students (Pittard et al., 2015). Thus, like instructional teaching behavior, organizational teaching behavior is likely not interacting with a negative inferential style when predicting hopelessness depression symptoms.

The Current Study

The purpose of the current study is to investigate the role of teaching behavior in the hopelessness theory of depression. As students spend a great deal of time with teachers throughout their lifetime (Rutter, 1982) it would not be surprising that certain types of teaching behavior may have a significant impact on hopelessness depression symptoms in students. However, thus far, most types of teaching behavior were not found to be associated with general depressive symptoms (Pittard et al., 2015). The hopelessness theory of depression could provide an explanation for the lack of significant findings. Certain teaching behaviors may impact depressive symptoms not directly but through activating an already existing negative inferential style. This conceptualization of teaching behavior is consistent with the conceptualization of hopelessness depression as consequence of an interaction between an individual vulnerability and a fitting stressor (Abramson et al., 1989).

First, main effects of both inferential style and negative teaching behavior were expected for both general and hopelessness depression symptoms. It was expected that individuals with a more negative inferential style or who report more negative teaching behavior will also report increased general depressive symptoms and hopelessness depression symptoms. In addition, based on the hopelessness theory of depression (Abramson et al., 1989), the conceptualization of teaching behaviors as stressors, and previous findings on the relations of teaching behavior and depressive symptoms in students (Pittard et al., 2015), it

was predicted that when students experience low levels of negative or socio-emotional teaching behavior, they would report hopelessness depression symptoms if they have a more negative inferential style compared to if they have a less negative inferential style. In addition, it was predicted that when students experience high levels of negative or socio-emotional teaching behavior, students who have a more negative inferential style will also report more hopelessness depression symptoms than students who have a less negative inferential style. Overall, it was expected that high levels of socio-emotional and negative teaching behavior would be the most critical for students with a more negative inferential style.

Following the hopelessness theory of depression (Abramson et al., 1989), it was expected that these patterns of findings would emerge only for the prediction of hopelessness depression symptoms. However, similar to previous studies testing the hopelessness theory of depression (e.g. Abela et al., 2006; Haefffel, 2010), it is possible that the interactions between negative or socio-emotional teaching behavior and negative inferential style predict general depressive symptoms as they also include hopelessness depression symptoms. Finally, it was predicted that instructional and organizational teaching behavior are not associated with depressive symptoms, independent of their interaction with negative inferential style and the type of depressive symptoms.

Methods

Participants

Participants are 152 first-time undergraduate freshmen in a medium sized, Southern university in the United States. Because participants were asked to report on their past school teachers, first-time freshman were chosen because they are closer to their schooling experience than other students in the university. Another advantage of this closeness to their school experience was the minimization of autobiographic memory bias (Anderson, Cohen, & Taylor, 2000). The current study had no exclusion criteria for participants; all of the first-time freshmen during a single school year were invited to participate in the study. Of the participating students, 44.7% identified as male and 55.3% identified as female. Further, 77.6% identified as European American, 8.5% as African American, 5.3% as Latino/a, 4.6% as biracial, 3.3% as Asian American, and 0.7% as a non-resident alien. The majority (69.7%) of participants were 18 years old, and 27.6% were 19 years old. Only 2.0% and 0.7% were 17 and 20 years old, respectively. The mean age was 18.27 ($SD = 0.50$) years.

Instruments

Cooperative Institutional Research Program 2010 Freshman Survey (CIRP). Demographic data was collected using the CIRP, a mandatory form completed by all students during their freshman orientation to the university. This form gathers demographic information including age, sex, and race/ethnicity.

Center for Epidemiological Studies – Depression Scale (CES – D). Radloff's (1977) CES-D is a self-report measure of current depressive symptoms that is often used with non-clinical populations. The measure contains 20 items rated in frequency from 0 to 3, with 0 indicating that the symptom occurs 'rarely or none of the time' and 3 indicating that the symptom occurs 'most or all of the time.' Example items include: 'I thought my life had been a failure,' and 'I had crying spells.' Item scores are summed, creating a composite

score that ranges from 0 to 60. A score of 16 or greater is generally used to indicate a clinically significant level of depressive symptoms. Internal consistency of the items was good in the current sample (Cronbach's $\alpha = .92$). Items from the CES-D were also used to create a measure of hopelessness depression symptoms (CES-D HD) based on the symptoms described by Abramson et al. (1989). This included motivational deficits (CES-D items 7 and 20), sad affect (CES-D items 3, 6, 12, 17, and 18), sleep disturbance (CES-D item 11), difficulty with concentration (CES-D item 5), and mood-exacerbated negative cognitions (CES-D items 14 and 15). The Cronbach's α of the CES-D HD items was good (.86)

Cognitive Style Questionnaire. The CSQ (Abramson et al., 2000) measures inferences about academic events. The version of the CSQ used in this study consists of six hypothetical negative achievement scenarios. For each hypothetical event participants are asked to write down one possible cause for this event. Each respondent then rates the degree to which the cause of the hypothetical event was (a) internal, (b) stable, and (c) global, which represented the inference about the cause of the event. Next, they rate the likelihood that further negative consequences will result from the event, which represented the inference related to the consequences of the event. Finally, participants rate the degree to which the occurrence of the event reveals something about the characteristics of themselves, which refers to inferences about the self, regarding the negative event. Each rating uses a 7-point Likert scale with higher scores representing a more negative inferential style. In the current sample the Cronbach's $\alpha = .91$ for the CSQ. The weakest link score was calculated by using the rating of the inferential style with the highest score, which represented the most negative inferential style.

Teaching Behavior Questionnaire (TBQ). Pössel, Rudasill, Adelson et al. (2013) developed the Teaching Behavior Questionnaire (TBQ), a student-report measure of teaching behavior. The TBQ includes four specific types of teaching behavior: *Negative Teaching Behavior* (9 items; e.g. 'My teacher threatens to punish me when I misbehave'); *Socio-Emotional Behavior* (10 items; e.g. 'My teacher talks with me about my interests'); *Instructional Behavior* (13 items; e.g. 'My teacher uses examples that I understand,' and 'My teacher's grade requirements are clear'); and *Organizational Behavior* (5 items; e.g. 'My teacher takes away a privilege if I abuse it'). These four factors have consistently emerged for multiple age groups, including both middle school and high school students (Pittard et al., 2015; Pössel, Rudasill, Adelson et al., 2013). A student-report measure, students indicate the frequency of teaching behavior of the teacher they experienced as most similar to themselves (Pössel & Smith, submitted) on a four-point scale (from 1 = *never*, to 4 = *always*). TBQ scores are calculated by averaging the item responses for each of the four subscales. Internal consistencies for the negative, socio-emotional, instructional, and organizational teaching scales are .86, .88, .86, and .71.

Procedure

After gaining approval from the university's Institutional Review Board, the Office of Accountability at the University of Louisville posted the survey materials online and sent an email notification to first-time undergraduate freshman in order to recruit them for the study. Students had a three-month window in which they could complete the survey, and were reminded via email once each month to participate. While

completing the TBQ, students were asked to complete the questionnaire about a teacher to whom they felt most similar during their previous schooling.

Statistical Analyses

The four teaching behavior types and inferential style variables were centered around their means before creating interaction terms. Following tests of normality of the dependent variables, two multiple regressions assuming a gamma distribution with an identity function were calculated using R (R Core Team, 2016). These examined the effects of nine predictor variables, which were the four teaching behavior types, inferential style, and interactions between the four teaching behavior types and inferential style on the dependent variable, depressive symptoms. These nine predictor variables were entered in two multiple regressions, one regression for each of the measures of depressive symptoms (CES-D & CES-D HD). To examine significant interaction effects, values of one standard deviation above and below the mean of the predictor variables were entered into regression equations to calculate levels of depressive symptoms for combinations of high and low negative inferential styles with high and low negative teaching behavior, as well as high and low negative inferential styles with high and low organizational teaching behavior (Cohen, Cohen, West, & Aiken, 2003).

Results

Tests of Normality of Dependent Variables

Examination of histograms and p-p plots indicated that the distributions of the CES-D and CES-D HD were positively skewed. This was substantiated by skew values of 0.68 (SE = 0.20) for both distributions. Kolmogorov-Smirnov (with Lilliefors correction) and Shapiro-Wilk tests of normality were significant ($p < .001$) for both dependent variables, indicating a distribution that is significantly different from normally distributed.

Selection of Distribution and Testing of Assumptions of Gamma Regression

A gamma distribution was selected both because of the nature of the data (viz., continuous, positive values, with positive skew, and no censoring) and the examination of the fit of univariate distributions to the data by maximum likelihood. The assumptions of Gamma regression were assessed and found tenable. The assumptions of homogeneity of variance and linearity of predictor outcome pair were assessed by inspection of standardized residual plots. The mean variance relationship, and positivity of outcome values were computationally examined. Collinearity was examined by the variance inflation factor. The independence of observations was assessed theoretically. Cases of undue influence, outliers, were assessed using Cook's D.

Model Building

The full model included the five main effects (four teaching behavior types & inferential style) and four interaction effects (interactions between each teaching behavior type & inferential style). The interaction between socio-emotional teaching behavior and inferential style and the interaction between instructional teaching behavior and inferential style were not significant in the full model ($p > .05$). This pattern of findings was identical in the model for general depressive symptoms and hopelessness depression symptoms. The

decision to remove variables from the full model was made by systematically dropping the interaction terms for socio-emotional teaching behavior and instructional teaching behavior to see which ones had a significant effect (using a chi-square test) on the deviance. These comparisons indicated that the trimmed model, with the five main effects and two interaction effects, was the best fit for the data.

Multiple Regressions

Descriptive statistics of all measures as well as Pearson correlations with other measures are presented in Table I. In both the regression predicting overall CES-D scores and the regression predicting CES-HD scores, a combined 30% of the variance was explained. As noted above, the pattern of findings were identical for both categories of depressive symptoms and will be described as such.

All five main effects were statistically significant (Table II). Negative teaching behavior, socio-emotional teaching behavior, and inferential style had positive associations with depressive symptoms. Instructional and organizational teaching behavior had negative associations with depressive symptoms. Further, there was a significant effect of the interaction between negative teaching behavior and inferential style, as well as a significant effect of the interaction between organizational teaching behavior and inferential style (Table II).

The graphs of the interaction effects can be seen in Figures 1, 2, 3, and 4. Individuals with a more negative inferential style had similar levels of depressive symptoms regardless of the level of negative teaching behavior. For individuals with a less negative inferential style, reports of depressive symptoms were higher when higher levels of negative teaching behavior were reported. Individuals with a more negative inferential style had higher levels of depressive symptoms when experiencing low levels of organizational teaching behavior compared to individuals with a less negative inferential style. Individuals with a less negative inferential style reported similar levels of depressive symptoms regardless of the level of organizational teaching behavior reported.

Table I. Intercorrelations, Internal Consistencies, and Descriptives of Study Measures (n = 152)

	Neg	Socio	Inst	Org	CES-D	CES-D HD	WL
Neg							
Socio	-.16*						
Inst	-.27**	.60***					
Org	.24**	.34***	.39***				
CES-D	.18*	-.08	-.32***	-.25**			
CES-D HD	.16*	-.08	-.32***	-.27**	.98***		
WL	.01	-.07	.01	.09	.22**	.22**	
Mean (SD)	1.78 (0.63)	3.20 (0.59)	3.39 (0.45)	2.94 (0.66)	36.95 (11.55)	22.57 (7.08)	4.01 (0.99)

Note. Correlations calculated using Pearson correlation. Means and standard deviations presented are uncentered. CES-D = general CES-D score, CES-D HD = hopelessness depression CES-D score, Neg = Negative Teaching Behavior, Socio = Socio-Emotional Teaching Behavior, Instructional Teaching Behavior, Org = Organizational Teaching Behavior, WL = Weakest Link of the Cognitive Style Questionnaire. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table II. Unstandardized Coefficients and Significance Values of Trimmed Regression Models Predicting CES-D and CES-D HD Scores

	CES-D			CES-D HD		
	β	SE	p	β	SE	p
Constant	37.15	0.83	< .001	22.71	0.51	< .001
Neg	3.82	1.46	.01	2.22	0.89	.013
Socio	3.74	1.71	.03	2.22	1.04	.035
Inst	-6.11	2.50	.016	-3.82	1.52	.013
Org	-4.42	1.42	.002	-2.85	0.87	.001
WL	2.72	.83	.001	1.61	0.50	.002
Neg x WL	-2.97	1.46	.044	-1.84	0.89	.001
Org x WL	-3.47	1.09	.002	-2.20	0.67	.001

Note. SE = Standard error, CES-D = General CES-D score, CES-D HD = Hopelessness depression CES-D score, Neg = Negative Teaching Behavior, Socio = Socio-Emotional Teaching Behavior, Inst = Instructional Teaching Behavior, Org = Organizational Teaching Behavior, WL = Weakest Link of the Cognitive Style Questionnaire.

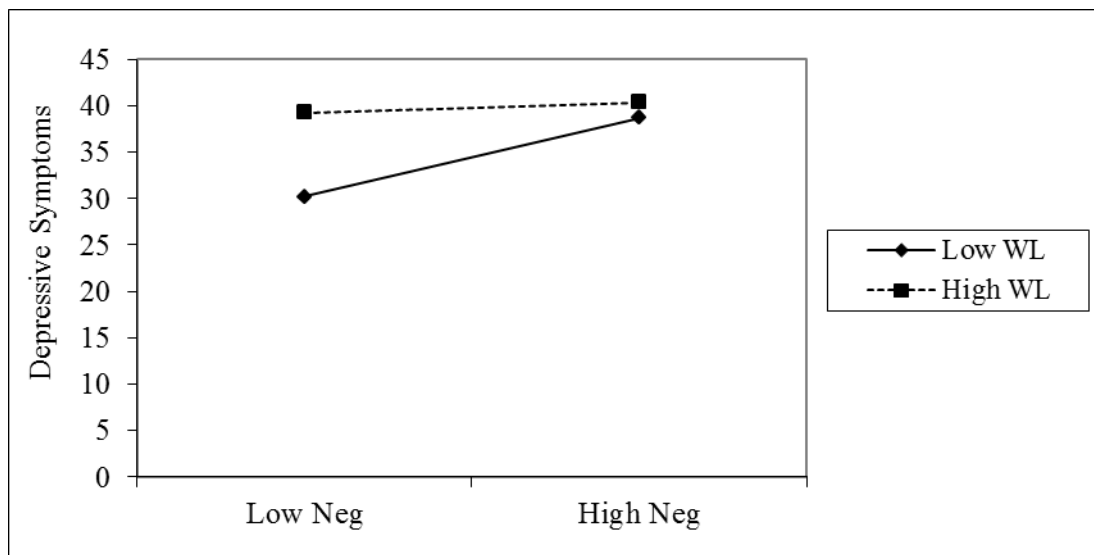


Figure 1. Interaction effect of negative teaching behavior and inferential style on general depression symptoms

NB. Neg = Negative Teaching Behavior, WL = Weakest Link of the Cognitive Style Questionnaire

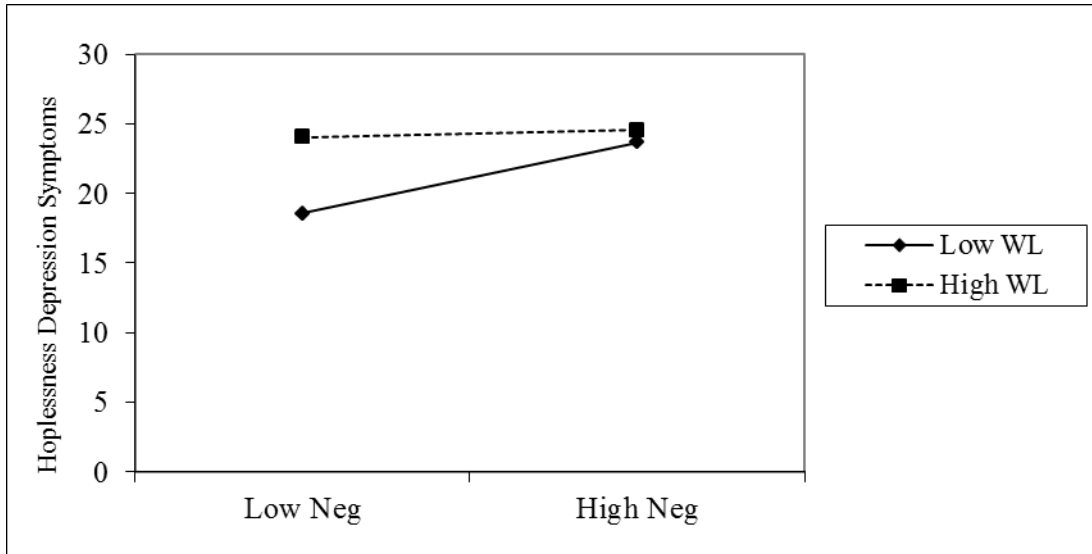


Figure 2. Interaction effect of negative teaching behavior and inferential style on hopelessness depression symptoms

NB. Neg = Negative Teaching Behavior, WL = Weakest Link of the Cognitive Style Questionnaire

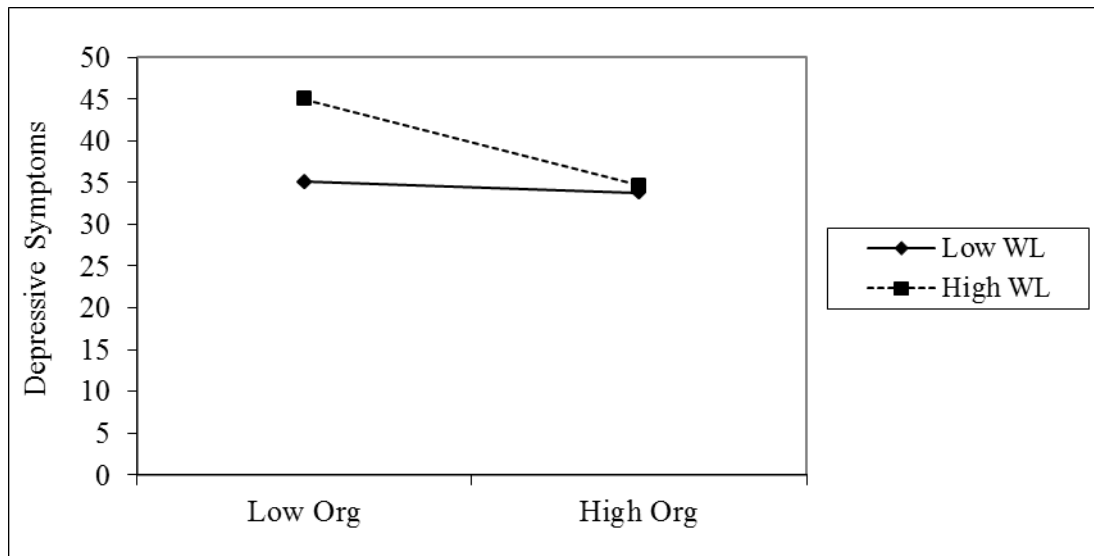


Figure 3. Interaction effect of organizational teaching behavior and inferential style on general depressive symptoms

NB. Org = Organizational Teaching Behavior, WL = Weakest Link of the Cognitive Style Questionnaire

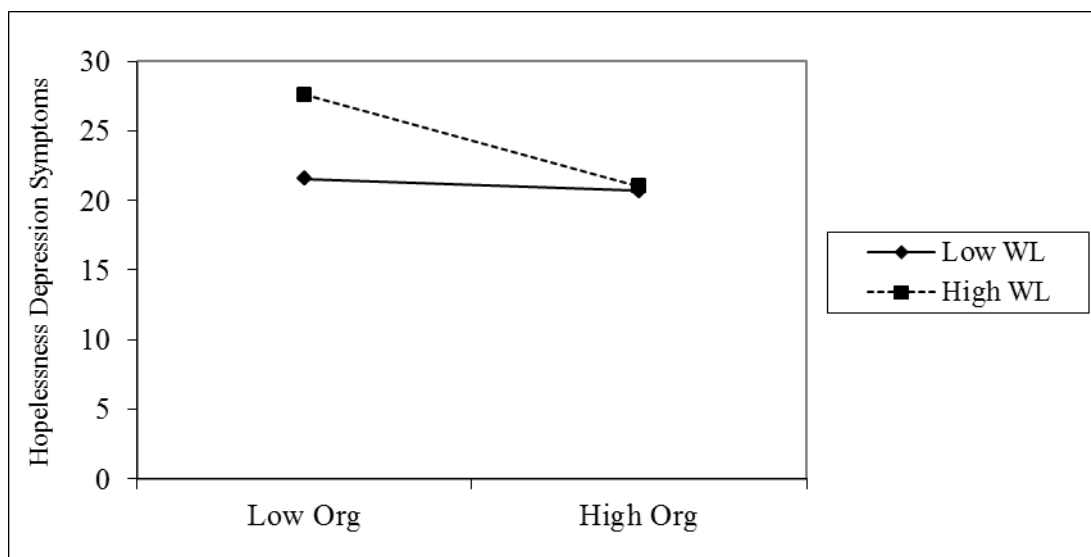


Figure 4. Interaction effect of organizational teaching behavior and inferential style on hopelessness depression symptoms

NB. Org = Organizational Teaching Behavior, WL = Weakest Link of the Cognitive Style Questionnaire

Discussion

The purpose of the current study was to examine teaching behavior types as possible stressors in the hopelessness theory of depression (Abramson et al., 1989), in an attempt to better understand the mechanism of the associations between teaching behavior, inferential style, and depressive symptoms. This study revealed multiple crucial findings.

Independent Effects of Inferential Style and Teaching Behavior

Inferential style. Consistent with expectations and previous research with college students (e.g. Abela et al., 2012), inferential style was positively related to general and hopelessness depression symptoms. Although the hopelessness theory of depression does not propose a main effect of inferential style (Abramson et al., 1989), it follows that inferential style was related to the subset of hopelessness depression symptoms and general depressive symptoms, based on previous research demonstrating this link (e.g. Abela et al., 2012).

Teaching behavior. Main effects were found for each of the four teaching behavior types, and were identical in their pattern for both general and hopelessness depressive symptoms. Although the hopelessness theory of depression does not predict main effects of stressors (Abramson et al., 1989), this finding was consistent with previous findings that negative teaching behavior is independently associated with general depressive symptoms (Pittard et al., 2015) as well as negatively associated with positive affect, and positively associated with negative affect (Pössel, Rudasill, Adelson et al., 2013).

That socio-emotional teaching behavior was positively associated with depressive symptoms was unexpected. A previous study of middle and high school students found no relationship between socio-emotional teaching behavior and depressive symptoms (Pittard et al., 2015). However, it has also been found

that teacher emotional support is associated with depressive symptoms in high school students, depending on the stress level of the student (Pössel, Rudasill, Sawyer et al., 2013). Experiences of depression can be reoccurring (e.g. Rutter, Caspi, & Moffitt, 2003), thus, college students who reported depressive symptoms may have been more likely to also have experienced depressive symptoms during previous schooling. It is possible that these school students pursued their teachers' emotional support in response to depressive symptoms, and in turn were more likely to be more attuned to this than their peers. Further research is needed before considering socio-emotional teaching behavior a stressor for all students.

Both instructional and organizational teaching behavior, were negatively related to depressive symptoms. Apart from one study that found a positive relationship between organizational teaching behavior and depressive symptoms in middle school students (Pittard et al., 2015), the current findings are consistent with previous research on instructional and organizational teaching behavior (Pittard et al., 2015; Pössel, Rudasill, Adelson et al., 2013).

Instructional and organizational teaching behavior are both associated with decreased negative affect (Pössel, Rudasill, Adelson et al., 2013). It is possible that students experience low levels of organizational or instructional teaching behavior as stressors, as evidenced by the inverse relationship between depressive symptoms and these teaching behavior types. In other words, experiencing teachers who do not promote instruction or understanding, and do not engage in consistent classroom management may be stressful for students.

Interaction Effects of Teaching Behavior and Inferential Style

Negative teaching behavior. As predicted, negative teaching behavior did interact with inferential style to predict general and hopelessness depressive symptoms but in an unexpected direction. For individuals with a more negative inferential style, the amount of negative teaching behavior experienced did not appear to have an impact on general or hopelessness depression symptoms. In fact, individuals with a more negative inferential style on average reported the same high level of depressive symptoms regardless of the amount of negative teaching behavior that was experienced. However, for individuals with a less negative inferential style, who are less vulnerable to depression, depressive symptoms were different depending upon by the amount of negative teaching behavior reported. As these individuals experienced more negative teaching behavior, they reported more depressive symptoms.

Possible explanations for these findings include that a memory bias for negative events may be influenced by participants' cognitive vulnerability. Individuals who are reporting more depressive symptoms are more likely to recall more negative events or negative stimuli compared to individuals who are experiencing fewer depressive symptoms (for a meta-analysis, see Matt, Vazquez & Campbell 1992). Further, the above reported main effects demonstrate that participants with more negative inferential styles report more depressive symptoms. Thus, individuals with more negative inferential styles may over-report negative teaching behavior, whereas individuals with less negative inferential styles (and fewer depressive symptoms) more accurately report negative teaching behavior. However, this explanation is unlikely because,

after examining individual data, some individuals reporting high levels of depressive symptoms did not also report high levels of negative teaching behavior.

Second, it is possible that individuals who have a more negative inferential style report similar levels of depressive symptoms regardless of the level of negative teaching behavior experienced because they already experience and react to stressors in other areas of their lives, independent of negative teaching behavior. This is commonly known as stress generation (Hammen, 1991). Research demonstrates that individuals who are depressed are more likely to experience more stressful life events compared to individuals who are not depressed, and that these stressful life events are in part a result of their behaviors and characteristics related to their disorder (for a review, see Liu & Alloy, 2010). Based on this, it might be that individuals with a more negative inferential style, a vulnerability to depression, are experiencing a high number of stressors in many areas of life. Logically, this includes the possibility that the students reporting greater levels of depressive symptoms are causing more negative teaching behaviors based on how they engage with their teachers. Future longitudinal studies are necessary to better understand the direction of this relationship.

Third, Abramson et al. (1989) argue that high levels of stress can trigger depression in individuals with any level of vulnerability, for example, individuals with a more or less negative inferential style. Abramson et al. (1989) also argue that even low levels of stress can trigger depression in vulnerable individuals, such as individuals with a more negative inferential style. The findings in the current study can be explained by this so-called 'tritation model'. Regardless of level of negative teaching behavior (stress) vulnerable individuals experienced similarly high levels of depressive symptoms. Further, when negative teaching behavior was high, individuals experienced similarly high levels of depressive symptoms, regardless of their vulnerability.

Organizational teaching behavior. Unexpectedly, organizational teaching behavior interacted significantly with inferential style in its relationship with depressive symptoms. Students with a more negative inferential style may interpret organizational teaching behavior differently from students with a less negative inferential style. In the theory of hopelessness depression (Abramson et al., 1989), low levels of organizational teaching behavior can be conceptualized as a stressor for students. For individuals with a less negative inferential style, the amount of organizational teaching behavior experienced does not appear to be related to the level of depressive symptoms that are reported. However, for individuals with a more negative inferential style, and who are thus more vulnerable to experiencing depression, the amount of organizational teaching behavior experienced was associated with the level of depressive symptoms reported. Vulnerable individuals experiencing lower levels of organizational teaching behavior reported more depressive symptoms, while individuals reporting more organizational teaching behavior reported fewer depressive symptoms. Low levels of organizational teaching behavior is characterized by not explaining classroom rules or why misbehavior is wrong, as well as a lack of smooth transitions between classroom activities (Pössel, Rudasill, Adelson et al., 2013). Students with a less negative inferential style may be able to adapt to this absence of classroom structure. Students with a more negative inferential style may be more prone to making negative inferences about the associated consequences for their academic work, how enduring the lack of

structure will be, and their thoughts about themselves given the lack of classroom structure (Abramson et al., 1989). Based on the theory of hopelessness depression, these negative inferences in response to the stressor are associated with depressive symptoms (Abramson et al., 1989).

Socio-emotional & instructional teaching behavior. Unexpectedly, socio-emotional teaching behavior did not significantly interact with negative inferential style in the relationship with depressive symptoms. Given this, it is apparent that level of negative inferential style does not matter for the relationship between socio-emotional teaching behavior and depressive symptoms. Individuals do not appear to respond differently to socio-emotional teaching behavior based on their cognitive vulnerability to depression. Consistent with the hypotheses, no interaction effect between instructional teaching behavior and negative inferential style on any type of depressive symptoms was found. Individuals do not appear to respond differently to instructional teaching behavior based on their cognitive vulnerability.

Applications for Teachers and Teacher Training

The current findings carry implications for individuals in school administration, school psychologists, and teachers. School psychologists can help teachers and other school personnel understand the different teaching behavior types and their relationships with student depressive symptoms, particularly negative, instructional, and organizational teaching behavior. Based on this, school psychologists can help teachers and other school personnel make changes to their teaching behavior and ways of interacting with classroom students. School personnel could use the current findings during consultation and the development of behavior management practices in the school, as well as during professional development seminars with teachers. The current study supports the notion that teachers should avoid using negative teaching behavior, which includes reducing the use of inconsistent consequences and letting negative emotions influence their behavior toward students. Regarding instructional and organizational teaching behavior and their negative relationships with depressive symptoms, school psychologists can help teachers promote the effective delivery of instruction as well as improve classroom management practices such as clearly defining classroom rules.

While teachers may not readily be aware of their students' inferential style, teachers should be aware that their behavior may affect students with a more negative inferential style differently. Noting the findings of negative teaching behavior's interaction with negative inferential style, as well as the interaction between organizational teaching behavior and negative inferential style, school psychologists can help teachers be more attuned to their students' responses to their negative teaching behavior or low levels of organizational teaching behavior, for example. Through making these changes, it may be possible to reduce students' depressive symptoms.

Limitations and Future Directions

Several limitations of the current study should be considered. The first limitation is the retrospective design of the study. Participants reported on a teacher with whom they had a class at some point during their entire schooling experience. Because of the nature of the design, the grade level or type of teacher on which the student chose to report could not be identified. Additionally, as measures were gathered at only one time

point, conclusions about the directionality of the findings could not be made, suggesting future longitudinal examination of these variables would be beneficial.

Next, the use of student-report instruments in the assessment of depressive symptoms, inferential style, and teaching behavior could be considered a limitation. Common method variance can lead to an overestimation of the relationship between several measures that are completed by the same person (e.g. Podsakoff, Mackenzie, Lee, & Podsakoff, 2003). Future studies could also consider measuring teacher variables through observation or teacher report, but the use of student-report when measuring student outcomes and their relationship with teaching behavior has been shown to be more relevant for this use (Douglas, 2009; Pössel, Rudasill, Adelson et al., 2013). Although future studies could consider gathering data on depressive symptoms, inferential style, and teaching behavior from multiple sources, self- and student-report instruments are also both less costly and more time-efficient (Douglas, 2009).

Another limitation of the current study is that data were gathered from university students and may not be generalizable to the general college-student aged population. However, in 2012, 51% of individuals aged 20 to 21 in the United States were enrolled college, and there was no difference in the rates of psychopathology between college-aged individuals who are enrolled in college and those who are not enrolled in college (Blanco et al., 2008; US Census Bureau, 2012). Thus, it is likely that findings can be generalized to the general college-student aged population.

In conclusion, the study contributes to our understanding of the relationship between teaching behavior and depressive symptoms through conceptualizing certain teaching behaviors as stressors in the hopelessness theory of depression. A better understanding of this relationship provides insight for school personnel, as there is the possibility of reducing student depressive symptoms for all students, regardless of inferential style, through changing teaching behavior, specifically, negative, organizational, and instructional teaching behavior. In addition, the reduction of negative teaching behavior may benefit individuals with a less negative inferential style even more than the broader student population. Similarly, the implementation of increased organizational teaching behavior may benefit students with a more negative inferential style even more so than the broader student population.

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