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A Reanalysis of Occupation and Suicide: Negative Perceptions of the Workplace Linked to Suicide Attempts

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ABSTRACT

Suicide is the ultimate outcome of poor psychological well-being; however, there is a paucity of research examining the link between occupation and suicide, despite early academic interest and the known importance of work to our everyday lives. We propose that this body of research was abandoned prematurely, and we provide a reanalysis by integrating the Job Characteristics Model and the Conservation of Resources model with extant suicide research. Specifically, we hypothesize that work design characteristics (job autonomy, task variety, physical demands) and threats to personal resources (absence of viewing work-as-career, work-family conflict, family-work conflict, job dissatisfaction) are linked to suicide attempts via depression and suicidal ideation. Utilizing three measurement occasions and 2,855 participants from the AddHealth database, our findings indicate that job autonomy, task variety, work-family conflict, family-work conflict, and job dissatisfaction all indirectly contribute to employees' suicide attempts via depression and suicidal ideation. Thus, negative employee perceptions of the workplace environment have much more severe consequences than is typically examined. Based on these results, we provide recommendations for developing a theoretically derived nomological net around suicidal behavior in an organizational context, and offer strategies for managers and employees to construct a work environment that is conducive to employee well-being.

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Conservation of resources model; job characteristics model; suicide

Stemming from the 1930s, social scientists have shown great interest in understanding the causes of suicide—for good reason. Suicide is the 10th leading cause of death and claims about 37,000 U.S. lives per year (Kochanek, Xu, Murphy, Minino, & Kung, 2012). On average, 101 U.S. citizens die from suicide every day, with 25 attempts for every one successful suicide (Crosby, Han, Ortega, Parks, & Gfoerer, 2011). Annually, per 100,000 people in the United States, 15.2 individuals die, 86.0 hospitalizations occur, and 140.6 emergency department visits transpire due to suicide attempts. Unlike other causes of death, suicide rates are not decreasing (Kochanek et al., 2012). In fact, out of the top 15 causes of death, suicide was the only cause to increase each year from 2005 to 2012 (Murphy, Kochanek, Xu, & Heron, 2015).

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Despite early interest in occupation and suicide (Bedeian, 1982; Powell, 1958), the two are rarely discussed together in modern studies, and we still lack a clear understanding of how—or even if—occupations influence suicide. The rarity of research is surprising given the influence of work to everyday life, including attitudes, mood, and well-being (Hobfoll, 1989; Taris, Bok, & Caljé, 1998). In fact, researchers have studied the link between job demands and health impairment (e.g., burnout, depression) at length, but few have examined the more severe outcome of suicide (e.g., Hakanen, Schaufeli, & Ahola, 2008). The few investigations into occupation and suicide typically report negligible or insignificant results (Bedeian, 1982; Bergman, 1979), or report inconsistent findings in terms of direction and magnitude (Orner & Mumma, 1976; Rose & Rosow, 1973).

This inconsistency may have led researchers to believe significant relationships were only sporadic and further research would be fruitless; however, the differing results may actually reflect methodological issues rather than true relationships. Furthermore, past studies lacked a strong theoretical grounding to explain why occupation might influence suicide (Bedeian, 1982; Boxer, Burnett, & Swanson, 1995; Rogers, 2001), leaving researchers without a framework for examining conflicting results. Given these factors, the study of occupation and suicide may have been abandoned prematurely, causing several important implications to be left unknown.

To reinvestigate the relationship between occupation and suicide, and to encourage researchers to look beyond the typical health impairment outcomes, we challenge assumptions about null and disparate results. First, we present a review of the literature linking occupations to suicide. Second, we integrate two theories of motivation—the job characteristics model (JCM; Oldham & Hackman, 2005) and conservation of resources model (COR; Hobfoll, 1989)—with extant suicide research to build a theoretically-driven model of perceptions of the workplace and suicide. Although the JCM and COR model are typically used to explain employee motivation, we propose these theories can be applied more broadly such that negative perceptions of the workplace may have deleterious effects on overall motivation and well-being, ultimately leading to suicidal behavior. This approach directs focus to employees' perceptions of the work environment (rather than specific occupations), taking a within-occupation approach and highlighting the importance of individual differences. Third, we perform a new analysis of occupation and suicide, through the application of more appropriate statistical and methodological techniques.

Overview of the Occupation–Suicide Relationship

Suicide is a motivated behavior with the intention to kill oneself, performed by a knowledgeable actor to bring about a desired change (Silverman, 2006). Suicide prevention has become a national imperative, but researchers often note its complicated dynamics that make it difficult to understand (Goldsmith, Pellmar, Kleinman, & Bunney, 2002; Mann, Oquendo, Underwood, & Arango, 1999). The fact that suicide cannot be attributed to a single cause or trigger has caused researchers to investigate a number of social, psychological, and familial risk factors (Rosenberg, 1999; Van Orden et al., 2010).

A potentially important risk factor is one's occupation. A strong academic interest in the relationship between occupation and suicide emerged from the 1930s to the early 1980s, with most studies focusing on the link between specific occupations and successful suicides (Alexander, 2001; Bedeian, 1982). In many of these early studies, death certificates and obituary reports for a particular county or state were coded for the cause of death as well as

occupation, and occupations with a relatively high frequency were believed to cause suicide (Powell, 1958; Rose & Rosow, 1973). However, statistics were rarely provided to support these conclusions, and many of the group differences were based on a modest amount of cases. Often, the number of suicides per occupation group was fewer than 10, and these small sample sizes may have contributed to the spurious results and conflicting findings (Bedeian, 1982; Bergman, 1979).

Beginning in the mid-1990s, the emergence of more advanced data collection techniques allowed for more sophisticated research designs. Most modern studies now use publicly available mortality datasets (Beautrais, 2006; Rimkeviciene, Hawgood, O'Gorman, & De Leo, 2015), which greatly increase sample sizes and allow researchers to detect trends within entire countries or regions. Despite these advances, notable theoretical and methodological issues remain a cause of concern.

In terms of theoretical limitations, authors often do not provide a priori theory, and rationale is provided only after significant relationships are found (Danto, 1978; Heiman, 1975; Roberts, Jaremin, & Lloyd, 2013). Even when theories are applied, they are usually in the context of specific occupational factors (e.g., vet euthanasia; Boxer et al., 1995; Skegg, Firth, Gray, & Cox, 2010; Tran, Crane, & Phillips, 2014), thereby limiting their generalizability to other occupations. Thus, there is still a strong need for theories that provide a framework for understanding why certain occupational factors might increase employees' risk of suicide—a call that has been made by other suicide researchers (Alexander, 2001; Alexopoulos, Kavalidou, & Messolora, 2016; Bedeian, 1982; Boxer et al., 1995).

In terms of methodological limitations, a focus is almost always given to between-job differences, ignoring within-job dynamics such as employee perceptions of the organizational context (Gallagher, Kliem, Beautrais, & Stallones, 2008; Meltzer, Griffiths, Brock, Rooney, & Jenkins, 2008). Even when individual characteristics are included, such as gender, age, and socio-economic status, within-job dynamics are still not included (Koskinen et al., 2002; Page, Taylor, Hall, & Carter, 2009). This is problematic given that those in the same job often perceive and report divergent experiences (Harrison & Klein, 2007), and these within-job differences are completely lost when only comparing between jobs (Firebaugh, 1978; Klein & Kozlowski, 2000). Finally, researchers almost entirely study successful suicide attempts, whether through obituary reports and death certificates or public datasets. As mentioned, only one out of every 25 suicide attempts is successful (Crosby et al., 2011), leaving the vast majority of suicide *attempts* unstudied and neglecting many precursors of suicide. Also, large concerns have been noted with the misclassification of suicides (Kraus, Schaffer, Chu, & Rice, 2005), suggesting that this method of research may be inaccurate in addition to providing a narrow focus.

Despite limitations, this history of research has provided several important insights into the relationship between perceptions of the workplace and suicide. To build on prior work, we integrate established organizational theories with models of suicide, and propose a general framework for linking employees' perceptions of the workplace to suicide attempts. The full theoretical model is presented in Figure 1.

Theoretical Grounds for Linking Occupation to Suicide

Several theoretical models have been developed to understand suicide, including the cognitive model of suicidal behavior (Wenzel & Beck, 2008), psychache (Shneidman, 1993), and many

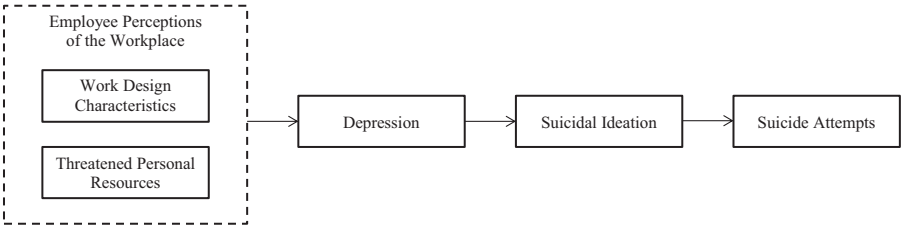

Figure 1. The proposed theoretical model linking perceptions of the workplace to suicide attempts.

others (Mann et al., 1999; Rosenberg, 1999; Smith & Cukrowicz, 2010). Most of these models specify that cognitive processes associated with suicidal acts, particularly suicidal ideation, are the most direct antecedent to suicide attempts, and the influence of affective states and well-being on suicidal behaviors are through these cognitive processes. Then, life events may influence affective states and well-being with certain dispositional factors strengthening or weakening this relationship. Together, these variables create a hierarchy of relevance to suicide.

Throughout ongoing research, depression—as an aspect of psychological well-being—is amongst the strongest predictors of suicidal ideation (Reed, Nugent, & Cooper, 2015; Reynolds, 2010). Depression is characterized by low mood, low self-esteem, decreased motivation, and loss of interest in activities (Brown & Harris, 2012; Reynolds, 2010). Although depression is well studied in the suicide literature, it is less commonly studied in the organizational literature (see Hakanen et al., 2008 for exception). Moreover, the relationships between perceptions of the workplace, depression, and suicide attempts are very rarely examined within a single study. Thus, in order to provide a comprehensive analysis while also laying the groundwork for subsequent hypotheses, we begin our theoretical model with the following hypothesis:

Hypothesis 1: The Relationship of Depression and Suicide Attempts is Mediated by Suicidal Ideation

Of the antecedents to depression, life events are among the most important, which includes occupational factors (Mann et al., 1999; Rosenberg, 1999; Smith & Cukrowicz, 2010). To elucidate why these factors—specifically, perceptions of work design characteristics and threatened personal resources—may be linked to depression (and ultimately, suicide attempts), we apply both the job characteristics model (JCM; Hackman & Lawler, 1971; Oldham & Hackman, 2005) and the conservation of resources model (COR; Hobfoll, 1989).

The JCM has been central to motivational research for decades, and states that jobs are more intrinsically motivating when certain work characteristics (e.g., autonomy, task variety) are present (Hackman & Lawler, 1971; Oldham & Hackman, 2005). These work characteristics give rise to critical psychological states (e.g., meaningfulness) that facilitate positive work outcomes (Humphrey, Nahrgang, & Morgeson, 2007). Although this model includes some well-being factors (e.g., burnout, anxiety) under the umbrella of work outcomes, we propose that this category can be expanded to include depression, suicidal ideation, and suicide attempts (via more proximal factors).

In addition to job characteristics, employees are also motivated to build and protect valued resources. This motivation is the key tenet of the conservation of resources model (COR; Hobfoll, 1989). Resources, such as energy, time, and psychological capital

(Culbertson, Fullagar & Mills, 2010; Hobfoll, 1989), are finite and may be depleted. When employees lose (or perceive a threat to) valued resources over an extended period of time, they begin to feel helpless in the face of diminishing returns. Thus, drawing on both JCM and COR theory allows us to investigate work design characteristics as well as threatened personal resources as precursors to suicidal behavior.

Finally, we argue that it is not the work design characteristics and personal resources per se that directly impact the employee; rather, it is the perception of these characteristics and resources that drive well-being. Thus, this shift from 'reality' to 'perceived reality' links cognitive appraisals of the workplace to cognitive processes related to suicide, and highlights the importance of studying individual (within-job) differences.

In the following, we draw on these two theories to propose a wide range of work-related perceptions that may be related to suicide. Perceptions of the workplace are broken into two categories: work design characteristics and threatened personal resources. The list of factors is by no means exhaustive, but is presented in hopes that occupational researchers will note the relevance of their research interests to suicide scholarship.

Linking Work Design Characteristics to Suicide Attempts

The current, expanded JCM includes three categories of work design characteristics: motivational, social, and work context characteristics (Humphrey et al., 2007). Within this study, we focus on motivational and work context characteristics as an initial test of our ideas, but encourage future research to include social characteristics in the analysis.

Motivational work characteristics are factors that make work more satisfying, often by making tasks more engaging or intrinsically rewarding (Humphrey et al., 2007). Motivational characteristics (e.g., task variety) are linked to important work and well-being outcomes via experienced meaningfulness, which facilitates positive attitudes and overall well-being. Conversely, a lack of motivational characteristics may decrease well-being (Taris et al., 1998). This suggests that employees who do not perceive their work as meaningful are at higher risk for decreased well-being and depression. Such findings are notable given that suicide researchers have identified feelings of meaninglessness as important precursors to suicide (Rogers, 2001). Thus, employees who perceive a lack of motivational work characteristics—and therefore a sense of meaningfulness—may have an increased risk of suicide. This paper focuses on job autonomy and task variety specifically, as two motivational work characteristics representative of the more general construct.

Hypothesis 2: Job autonomy and Task Variety are Negatively Related to Suicide Attempts, as Mediated by Depression and Suicidal Ideation

Certain *work context characteristics* (i.e., broader work conditions including physical aspects) may also impair employee well-being (Humphrey et al., 2007). One such work context characteristic is physical demands, defined as the degree of effort exerted on the job. While physical demands have clear implications for injuries and disorders (which causes concern for retention issues; Trinkoff, Lipscomb, Geiger-Brown, Storr, & Brady, 2003), they are also related to negative job attitudes and impaired well-being because they tax employees' physical as well as emotional resources (Humphrey et al., 2007). For example, in a study of Finnish dentists, job demands (including perceived physical work environment demands)

were linked to depression via burnout (Hakanen et al., 2008). This demonstrates that perceiving work to be physically demanding may deplete emotional as well as physical energy, which may then spur thoughts of helplessness and suicide.

Hypothesis 3: Physical Demands are Positively Related to Suicide Attempts, as Mediated by Depression and Suicidal Ideation

Linking Threatened Personal Resources to Suicide Attempts

In addition to work design characteristics, certain threats to personal resources may also result in decreased well-being (Hobfoll, 1989). As an initial test of these ideas, this paper examines three threats to personal resources: failing to satisfy higher-order work needs, conflict between the family and home domains, and job dissatisfaction.

Satisfying *higher-order work needs* is often an important source of meaningfulness for employees (Spector, 1997). Given the link between experienced meaningfulness and employee well-being, it is not surprising that those who fail to satisfy their higher-order needs report poorer psychological well-being, including depression (Humphrey et al., 2007; Maslow, 2013). Moreover, higher-order need strength (i.e., the need for personal growth and development) is a key component of the JCM in that employees with high growth-need strength experience more positive personal and work outcomes (Hackman & Lawler, 1971; Spector, 1997). If employees feel unable to satisfy higher-order needs, this may threaten key personal characteristics resources; that is, in the absence of experienced meaningfulness, it may be difficult to remain optimistic and hopeful for the future (Culbertson et al., 2010). In this study, we focus on viewing work as a career (vs. a job) as one avenue for satisfying higher-order work needs (Wrzesniewski, McCauley, Rozin, & Schwartz, 1997). Employees who view their work as a career are deeply and personally invested in their work and are focused on advancement; such employees may thus be more likely to perceive their work as meaningful and part of a greater goal. In contrast, employees who view their work as a job consider work to be a necessity of life, merely providing financial security. Thus, because satisfying higher-order work needs promotes meaningfulness and well-being, we propose that viewing work-as-career is negatively related to suicide attempts, via lower depression and suicidal ideation.

Hypothesis 4: Viewing Work-As-Career is Negatively Related to Suicide Attempts, as Mediated by Depression and Suicidal Ideation

Among personal resources, negative perceptions of the workplace may also threaten—and deplete—employees' time and energy, especially for those juggling multiple roles. People who balance both work and family demands may feel that their personal resources are overtaxed, such as when investing resources into one role (e.g., work) results in fewer available resources for the other (e.g., home; Greenhaus & Beutell, 1985; Hobfoll, 1989). This incompatibility between work and family demands is referred to as work-family conflict.

Notably, conflict between the work and home domains is not uni-directional. Work demands can make performance of the family role more difficult (i.e., *work-family conflict*; WFC), and family demands can make performance of the work role more difficult (i.e., *family-work conflict*; FWC). While WFC and FWC are often a result of finite resources, both sources of conflict can further exacerbate resource drain and stress levels (Hobfoll, 1989). For example, if employees feel they are underperforming at work (due to family conflicts),

they may attempt to invest more of their time and energy into the work role for fear of losing their job. The continued stress of attempting to juggle both work and family roles may then result in negative mood, decreased quality of life, and depression (Grandey & Cropanzano, 1999; Greenhaus, Collins, & Shaw, 2003).

Broadening our understanding of WFC and FWC, a growing body of research has studied a Spillover-Crossover Model of the work-family interface, in which experiences are linked across domains (e.g., work to home) as well as within domains (e.g., spouse to spouse; Bakker & Demerouti, 2013). This research suggests that work-family dynamics are more complex than traditional models have proposed (e.g., Greenhaus & Beutell, 1985). Although these dynamics are worthy of greater attention, we begin our examination with the resource drain perspective:

Hypothesis 5: Work-Family Conflict and Family-Work Conflict are Positively Related to Suicide Attempts, as Mediated by Depression and Suicidal Ideation

Finally, we propose that job dissatisfaction (i.e., low *job satisfaction*) may be a threat to valued personal resources, and that dissatisfaction with the job might color one's overall cognitive outlook on life. Job satisfaction is closely related to personal characteristics resources (such as efficacy and resiliency), and individuals with high job satisfaction also tend to have a more positive outlook on life (Culbertson et al., 2010; Judge & Watanabe, 1993). In contrast, a lack of job satisfaction might threaten valued personal resources, thereby increasing feelings of hopelessness and depression (Faragher, Cass, & Cooper, 2005). For example, if employees perceive limited career growth or organizational support but have to continue investing time and energy into the role, COR theory suggests that doing so will become increasingly distressing. Thus, we propose that individuals with higher job satisfaction experience increased well-being (i.e., reduced depression), which should therefore be related to less suicidal ideation and fewer suicide attempts.

Hypothesis 6: Job Satisfaction is Negatively Related to Suicide Attempts, as Mediated by Depression and Suicidal Ideation

Summary

In sum, we hypothesize that negative perceptions of the workplace are linked to suicide attempts via depression and suicidal ideation. Employee well-being is directly impacted by perceptions of the environment; thus, negative appraisals of the job and perceived threats to personal resources are a source of stress for employees. If this stress builds over time, it may cause employees to lose hope and become depressed, eventually leading to suicidal behavior.

Method

We make several efforts to overcome the methodological limitations of prior studies (i.e., solely analyzing between-occupation differences, using successful suicides as the outcome, and relying on limited datasets). First, we analyze within-occupation differences, as explicated in the construction of the hypotheses. Second, we use suicidal ideation and suicide attempts as our outcomes, affording deeper insight compared to only studying successful

suicide attempts. Third, we analyze a large, publicly available, nationally representative, longitudinal dataset.

Participants and Procedures

Data was obtained from Wave I, Wave II, and Wave IV of the publicly available AddHealth database (Harris et al., 2009), which was initially created to understand the influences of adolescents' health and risk behaviors. The database contains longitudinal data, collected from a probability sample of 6,500 nationally representative U.S. adolescents. These individuals were administered surveys at four different times across a fourteen-year timespan: Wave I was administered in 1994, Wave II in 1996 (88% response rate), Wave III in 2001 (77% response rate), and Wave IV in 2008 (80% response rate). Although the participants were adolescents during the first phase of data collection, they were employment-age adults by the fourth phase. For the variables included within this paper, most were collected via a paper-and-pencil survey. For the more sensitive items, such as those related to suicide and depression, a separate method was used to reduce potential response bias. Participants listened through earphones to the pre-recorded questions and entered their answers directly into a laptop computer, keeping their answer confidential and separating it from the question itself.

We analyzed Wave I, Wave II, and Wave IV to test our hypotheses. These three waves of data also allowed us to examine possible alternative explanations; namely that depressed individuals may become employed in less-desirable occupations, and the relationship between perceptions of the workplace and depression may actually be caused by this earlier depression. As further detailed below, our analyses control for depression, suicidal ideation, and suicide attempts of participants before they were working in their current occupations (Waves I and II), and test the hypotheses using participant responses while they were working in their current occupation (Wave IV). Thus, we were able to control for variance in the outcomes that could not be attributed to participants' occupations, allowing us to analyze the effect of our predictors on the change in our outcomes from pre-employment to post-employment.

The final sample was restricted to those who completed surveys across the three waves and were working 35 hours or more a week at Wave IV, resulting in 2,855 participants. In the final sample, 48% (1,366 participants) were female. In terms of ethnicity, 64% were Caucasian (1,839 participants), 22% were African American (622 participants), and 14% were other ethnicities (385 participants). The majority of participants were born between 1976 and 1982 (98.8%), and the average birth year was 1979. Their average age was 16.04 (std. dev. = 1.75) at Wave I and 29.04 (std. dev. = 1.77) at Wave IV. Participants had an average household income of $49,076 (std. dev. = $54,555) at Wave I, and between $40,000 to $50,000 at Wave IV. Wave I allowed participants to provide a direct number for income, but Wave IV only allowed a range.

Measures

All measures in the AddHealth database were the result of extensive pilot testing and necessary revision in response to pilot test results (Udry, 2001).

Motivational Work Characteristics

Two motivational work characteristics, *job autonomy* and *task variety*, were examined in this study. Job autonomy was measured with the item "Overall, how often do you have the freedom to make important decisions about what you do at work and how you do it?" Task variety was measured with the item "How much of the time do you do the same thing repeatedly, that is over and over?" For both items, responses were provided on a 4-point scale that ranged from 1 (*None or almost none of the time*) to 4 (*All or almost all of the time*). Responses to the task variety item were reverse-coded.

Work Context Characteristics

The work context characteristic of interest was *physical job demands*. Physical job demands was gauged with the item: "In your current primary job, do you spend most of your time: (1) Standing, doing hard physical work, (2) Standing, doing moderate physical work, (3) Standing, doing light physical work, (4) Seated, for example, using a computer or driving." We treated each response as a separate category and dummy-coded the item into three separate variables, allowing for the analysis of this variable through regression methods. In the results, those who responded (1) were the comparison group. Those who responded (2) were coded as a "1" in the first dummy variable, called Group 1; those who responded (3) were coded as a "1" in the second dummy variable, called Group 2; and those who responded (4) were coded as a "1" in the third dummy variable, called Group 3.

Satisfying Higher-Order Work Needs

The specific higher-order work need under investigation was viewing work-as-career, and was measured with an item that asked whether participants' current job fit with their career goals. The item read: "Which one of the following best describes your current primary job?" Responses included: (1) It is part of my long-term career or work goals, (2) It is preparation for my long-term career or work goals, (3) It is not related to my long-term career or work goals, and (4) I do not have long-term career or work goals. We treated each response as a separate category and dummy-coded the item into three separate variables. In the results, those who responded (1) were the comparison group. Those who responded (2) were coded as a "1" in the first dummy variable, called Group 1; those who responded (3) were coded as a "1" in the second dummy variable, called Group 2; and those who responded (4) were coded as a "1" in the third dummy variable, called Group 3.

Work-Family Conflict

Work-family conflict was measured with the item: "(In the past 12 months/Since you started your current job) how often on your primary job have you spent less time with your family than you wanted because of work responsibilities?" Response options ranged from 1 (*Frequently*) to 4 (*Never*), and were reverse-coded for analyses.

Family-Work Conflict

Family-work conflict was measured with the item: "Indicate how much you would agree or disagree with this statement: Family responsibilities have interfered with my ability to work." Response options ranged from 1 (*Strongly agree*) to 5 (*Strongly disagree*), and were reverse-coded for analyses.

Job Satisfaction

To measure job satisfaction, an item was given that read, "How satisfied are you with this job as a whole?" Response options ranged from 1 (*Extremely Satisfied*) to 5 (*Extremely Dissatisfied*), and were reverse-coded for analyses.

Depressive Symptoms

To measure depressive symptoms, the reduced version of the Center for Epidemiologic Studies Depression (CES-D) scale was administered (Andresen, Malmgren, Carter, & Patrick, 1994; Radloff, 1977). This measure is a ten-item scale, which asks participants to indicate, "how often you have felt this way during the past seven days?" Example items are, "I felt I was just as good as other people," and "I felt depressed." Response options ranged from 0 (*Never or rarely*) to 3 (*Most of the time or all of the time)*. This scale has been extensively validated in previous studies (Knight, Williams, McGee, & Olaman, 1997; Radloff, 1991). The same scale was administered to measure depressive symptoms during Wave I ($\alpha = .80$), Wave II ($\alpha = .82$), and Wave IV ($\alpha = .82$).

Suicidal Ideation

The first primary outcome of this study is suicidal ideation, measured with a single item that read, "During the past 12 months, have you ever seriously thought about committing suicide?" Participants responded either (0) No or (1) Yes.

Frequency of Suicide Attempts

The other primary outcome of this study is actual suicide attempts. To measure this, a single item was given that read, "During the past 12 months, how many times have you actually attempted suicide?" Response options provided were (0) None, (1) Once, (2) Twice, (3) Three or Four, and (4) Five or More Times.

Control Variables

To help rule out spurious relationships and alternative explanations, we controlled for demographic characteristics (age and gender) related to suicide in prior studies (Canetto & Sakinofsky, 1998) and participants' history with the outcomes prior to employment.

Age

Participants' *age* was calculated by subtracting their birth year from 2008.

Gender

Gender was coded (1) Male or (2) Female.

History of Depressive Symptoms

Participants' Wave I and Wave II CES-D scores were averaged together to make a history of depressive symptoms variable.

History of Suicidal Ideation

Wave I and Wave II suicidal ideation responses were averaged together to make a history of suicidal ideation variable.

History of Suicide Attempts

Wave I and II suicide attempt responses were averaged together to make a history of suicide attempts variable.

Data Analytic Approach

Several analyses were performed to test hypotheses, and all calculations were performed in SPSS unless otherwise noted in the results section. First, means, standard deviations, and correlations were calculated. These initial analyses showed that several outcome variables were skewed, prompting the need for specialized analyses. Second, a regression analysis was performed to calculate the impact of all predictors on depressive symptoms. Third, a binary logistic regression was performed to calculate the impact of all predictors on suicidal ideation. Fourth, a negative binominal regression with log link was performed to calculate the impact of all predictors on the frequency of suicide attempts. Fifth, Sobel tests were performed to analyze the mediation of depressive symptoms between predictors and suicidal ideation. Sixth, Sobel tests were again performed to analyze the serial mediation of depressive symptoms and suicidal ideation between predictors and the frequency of suicide attempts. A pairwise deletion method was used for all correlations, and a listwise deletion method was used for all other analyses.

Results

Table 1 includes means, standard deviations, and Kendall's Tau-b correlations. All interpretations of statistical significance follow the traditional $p < .05$ cutoff, but other p-values are specified to accurately report the results (i.e., $p < .10$, $p < .01$, $p < .001$).

First, the relationships of perceptions of the workplace with Wave IV depressive symptoms were analyzed through a regression analysis, while controlling for gender, age, and

Table 1. Means, Standard Deviations, and Kendall's Tau-*b* Correlations Between All Continuous Variables.

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	1.48	.50												
2. Age	29.04	1.77	−.07**											
3. History of Depressive Symptoms	.63	.42	.12**	.11**										
4. History of Suicidal Ideation	.12	.28	.09**	.04*	.37**									
5. History of Suicide Attempts	.06	.31	.06**	−.01	.23**	.48**								
6. Job Autonomy	3.01	.89	−.04*	.02	−.08**	−.05*	−.04							
7. Task Variety	2.17	.92	−.04*	.02	−.13**	−.04*	−.07**	.07**						
8. Work/Fam Conflict	2.22	1.10	−.03	.03	.09**	.02	.01	.01	−.05**					
9. Fam/Work Conflict	2.00	1.07	.04*	.09**	.13**	.07**	.03	−.01	−.07**	.27**				
10. Job Satisfaction	3.94	.87	.00	.03	−.13**	−.07**	−.06**	.25**	.16**	−.10**	−.10**			
11. Depressive Symptoms	.57	.44	.09**	−.01	.36**	.17**	.12**	−.13**	−.15**	.15**	.21**	−.27*		
12. Suicidal Ideation	.06	.23	.04*	−.01	.12**	.15**	.13**	−.06**	−.06**	.04*	.08**	−.12**	.29**	
13. Suicide Attempts	.01	.12	−.00	−.02	.04*	.04	.03	−.00	−.05*	.02	.04*	−.03	.11**	.25**

Note: Work/Fam Conflict = Work-family conflict. Fam/Work Conflict = Family-work conflict.
**$p < .01$; *$p < .05$.

Table 2. Regression of Depressive Symptoms.

	B	S.E.	*β*	Wald
Constant	.878	.135		42.617***
Control: Gender	.042	.016	.048	7.327**
Control: Age	−.011	.004	−.044	6.828**
Control: History of depressive symptoms	.316	.018	.302	306.812***
(1) Physical demands				
(1a) Group1	.034	.023	.027	2.076
(1b) Group 2	−.001	.019	−.001	.004
(1c) Group 3	−.024	.019	−.022	1.535
(2) Job autonomy	−.021	.009	−.043	6.302*
(3) Task variety	−.022	.008	−.046	7.130**
(4) Viewing work-as-career				
(4a) Group 1	.006	.035	.007	.033
(4b) Group 2	.053	.036	.055	2.193
(4c) Group 3	.055	.037	.052	2.309
(5) Work/Fam Conflict	.027	.007	.067	14.924***
(6) Fam/Work Conflict	.053	.007	.131	56.125***
(7) Job satisfaction	−.086	.009	−.172	83.909***
F				57.245
R^2				.22
χ^2/df				50.666

Note: Work/Fam Conflict = Work-family conflict. Fam/Work Conflict = Family-work conflict.
***$p < .001$; **$p < .01$; *$p < .05$; ×$p < .10$.

history of depressive symptoms (Table 2). From this analysis, job autonomy ($B = -.021$, *S.E.* = .009, $\beta = -.043$, $p < .05$), task variety ($B = -.022$, *S.E.* = .008, $\beta = -.046$, $p < .01$), work-family conflict ($B = .027$, *S.E.* = .007, $\beta = .131$, $p < .001$), family-work conflict ($B = .053$, *S.E.* = .007, $\beta = .131$, $p < .001$), and job satisfaction ($B = -.086$, *S.E.* = .009, $\beta = -.172$, $p < .001$) were all significant predictors of depressive symptoms. Also, history of depressive symptoms ($B = .316$, *S.E.* = .018, $\beta = .302$, $p < .001$), gender ($B = .042$, *S.E.* = .016, $\beta = .048$, $p < .01$), and age ($B = -.009$, *S.E.* = −.011, $\beta = -.004$, $p < .01$) were significant predictors of depressive symptoms. Alternatively, physical demands and viewing work-as-career were not significant predictors of depressive symptoms (all dummy-variables, $p > .05$).

Next, to measure the relationship between the multiple predictors and suicidal ideation, a binary logistic regression was performed because suicidal ideation was coded dichotomously. In the first step, each predictor was simultaneously entered into the regression equation, while controlling for gender, age, history of depressive symptoms, and history of suicidal ideation. In the second step, Wave IV depressive symptoms was entered. Only the second step is reported, but all steps are included in Table 3. When including Wave IV depressive symptoms, history of suicidal ideation ($B = 1.219$, *S.E.* = .251, *Exp(B)* = 3.383, $p < .001$), job satisfaction ($B = -.202$, *S.E.* = .100, *Exp(B)* = 4.113, $p < .05$), and Wave IV depressive symptoms ($B = 1.932$, *S.E.* = .180, *Exp(B)* = 6.905, $p < .001$) significantly predicted suicidal ideation. However, none of the other perceptions of the workplace significantly predicted suicidal ideation.

Because the frequency of suicide attempts was coded as a count variable with an unequal distribution, a negative binominal regression with log link was used to analyze its relationship with the multiple predictor variables. Like the binary logistic regression, each predictor was simultaneously entered into the regression equation in the first step, while controlling for gender, age, history of depressive symptoms, history of suicidal ideation, and history of

Table 3. Binary Logistic Regression of Suicidal Ideation.

	Step 1				Step 2			
	B	S.E.	Wald	Exp(B)	B	S.E.	Wald	Exp(B)
Constant	−.998	1.543	.418	.369	−2.936	1.628	3.251$^{\times}$	.053
Control: Gender	.185	.182	1.031	1.203	.061	.192	.100	1.063
Control: Age	−.062	.048	1.637	.940	−.041	.050	.663	.960
Control: History of Depressive Symptoms	.468	.194	5.837*	1.596	−.148	.216	.471	.862
Control: History of Suicidal Ideation	1.229	.237	26.809***	3.418	1.219	.251	23.503***	3.383
(1) Physical demands			1.047				.764	
(1a) Group1	.267	.263	1.029	1.306	.226	.273	.686	1.254
(1b) Group 2	.107	.221	.235	1.113	.109	.232	.221	1.115
(1c) Group 3	.090	.227	.158	1.094	.122	.240	.260	1.130
(2) Job autonomy	−.102	.092	1.213	.903	−.073	.097	.562	.930
(3) Task variety	−.109	.097	1.262	.896	−.039	.101	.151	.961
(4) Viewing work-as-career			2.213				1.593	
(4a) Group 1	.436	.458	.908	1.547	.463	.493	.882	1.589
(4b) Group 2	.536	.453	1.396	1.709	.456	.489	.870	1.578
(4c) Group 3	.626	.452	1.920	1.870	.592	.486	1.486	1.808
(5) Work/Fam Conflict	.037	.078	.223	1.037	−.022	.081	.077	.978
(6) Fam/Work Conflict	.175	.073	5.773*	1.191	.063	.077	.673	1.065
(7) Job satisfaction	−.367	.095	14.987***	.693	−.202	.100	4.113*	.817
(8) Depressive symptoms					1.932	.180	115.633***	6.905
Nagelkerke R^2			.106				.218	
χ^2/df			7.287				14.229	

Note: Work/Fam Conflict = Work-family conflict. Fam/Work Conflict = Family-work conflict.
$^{***}p < .001$; $^{**}p < .01$; $^{*}p < .05$; $^{\times}p < .10$.

suicide attempts. Then, in the second step, Wave IV depressive symptoms was entered. Lastly, suicidal ideation was included in the third step. Once again, only the final step is reported, but all results are provided in Table 4. Of the predictor variables, only suicidal ideation ($B = 3.168$, *S.E.* $= .462$, *Wald* $= 47.052$, $p < .001$) significantly predicted the frequency of suicide attempts.

Lastly, Sobel tests were used to analyze the indirect effects, using a calculator provided by Preacher & Leonardelli (2014) for simple indirect effects. The indirect effect of Wave IV depressive symptoms on the frequency of suicide attempts through suicidal ideation was significant ($z = 5.779$, *S.E.* $= 1.059$, $p < .001$), supporting Hypothesis 1—the relationship between depressive symptoms and suicide attempts is mediated by suicidal ideation. The indirect effects of job autonomy ($z = -2.280$, *S.E.* $= .018$, $p < .05$), task variety ($z = -2.664$, *S.E.* $= .016$, $p < .01$), work-family conflict ($z = 3.630$, *S.E.* $= .014$, $p < .001$), family-work conflict ($z = 6.187$, *S.E.* $= .017$, $p < .001$), and job satisfaction ($z = -7.137$, *S.E.* $= .023$, $p < .001$) on suicidal ideation through Wave IV depressive symptoms were all significant.

We also tested the indirect effects of perceptions of the workplace on the frequency of suicide attempts through Wave IV depressive symptoms and suicidal ideation. To do so, a Sobel test of the serial indirect effect was performed using a formula provided by Hayes (2013). Results from this analysis indicated that job autonomy ($z = -2.164$, *S.E.* $= .059$, $p < .05$), task variety ($z = -2.483$, *S.E.* $= .054$, $p < .05$), work-family conflict ($z = 3.208$, *S.E.* $= .052$, $p < .01$), family-work conflict ($z = 4.594$, *S.E.* $= .071$, $p < .001$), and job satisfaction ($z = -4.944$, *S.E.* $= .106$, $p < .001$) had a significant indirect effect on frequency of suicide attempts through Wave IV depressive symptoms and suicidal ideation.

Table 4. Negative Binominal Regression With Log Link of Suicide Attempts.

	Step 1			Step 2			Step 3		
	β	S.E.	Wald	β	S.E.	Wald	β	S.E.	Wald
Constant	−2.009	3.395	.350	−4.407	3.480	1.603	−5.198	3.678	1.997
Control: gender	.137	.411	.112	.073	.423	.030	.102	.429	.057
Control: age	−.144	.105	1.877	−.096	.107	.806	−.081	.116	.481
Control: history of depressive symptoms	.378	.430	.773	−.127	.453	.078	−.007	.494	.000
Control: history of suicidal ideation	.630	.620	1.031	.641	.620	1.070	−.007	.666	.000
Control: History of suicide attempts	.113	.420	.072	.074	.415	.031	.056	.509	.012
(1) Physical demands									
(1a) Group1	1.172	.505	5.395*	1.159	.522	4.925*	1.037	.535	3.755×
(1b) Group 2	.567	.479	1.402	.492	.492	1.002	.289	.532	.294
(1c) Group 3	−.895	.787	1.293	−.983	.802	1.503	−1.123	.819	1.878
(2) Job Autonomy	.125	.201	.388	.175	.210	.693	.188	.225	.696
(3) Task Variety	−.424	.228	3.469×	−.316	.228	1.921	−.302	.252	1.436
(4) Viewing work-as-career									
(4a) Group 1	.354	1.092	.105	.313	1.107	.080	.229	1.155	.039
(4b) Group 2	.785	1.068	.541	.575	1.083	.282	.523	1.149	.207
(4c) Group 3	1.095	1.053	1.082	.953	1.060	.809	.887	1.129	.618
(5) Work/Fam conflict	.045	.167	.073	.008	.168	.002	−.029	.184	.025
(6) Fam/Work conflict	.269	.151	3.168×	.176	.155	1.279	.180	.171	1.102
(7) Job satisfaction	−.054	.209	.068	.034	.210	.026	.145	.222	.426
(8) Depressive symptoms				1.515	.331	20.974***	.455	.3811	1.427
(9) Suicidal ideation							3.168	.462	47.052***
χ^2/df			2.282			3.263			5.863

Note: Work/Fam Conflict = Work-family conflict. Fam/Work Conflict = Family-work conflict.
***$p < .001$; **$p < .01$; *$p < .05$; ×$p < .10$.

Together, the significant indirect effect of job autonomy, task variety, work-family conflict, family-work conflict, and job satisfaction on suicide attempts through depressive symptoms and suicidal ideation supported Hypotheses 2, 5, and 6—job autonomy, task variety, (H2) and job satisfaction (H6) were indirectly and negatively related to suicide attempts, whereas work-family conflict and family-work conflict (H5) were indirectly and positively

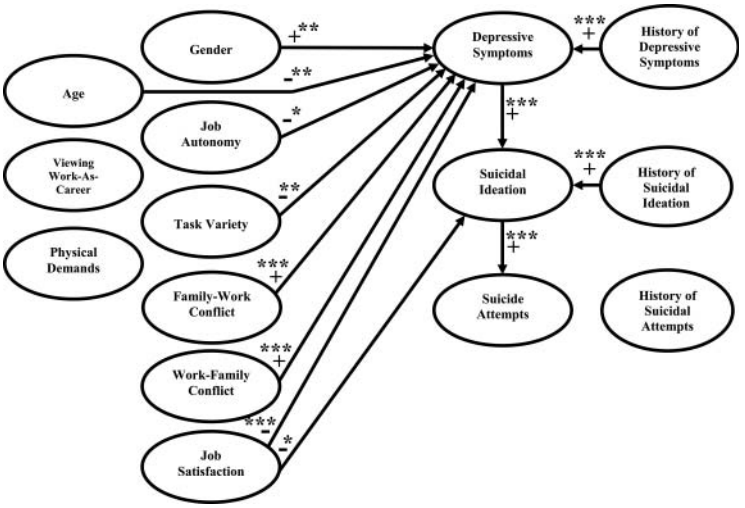

Figure 2. Visual representation of significant model paths. *Note.* *$p < .05$; **$p < .01$; ***$p < .001$.

related to suicide attempts. Hypothesis 3 and 4 were not supported, as physical demands and viewing work-as-career were not related to any of the outcomes of interest. These results are visually presented in Figure 2.

Discussion

Consistent with past research on depression and suicide (Reed et al., 2015), we found that the relationship between depression and suicide attempts is mediated by suicidal ideation. This relationship lays the groundwork for understanding why certain employee perceptions of the workplace may be linked to suicide attempts, as demonstrated by the number of significant predictors within this study. Specifically, motivational work characteristics (i.e., job autonomy, task variety), work-family and family-work conflict, and job satisfaction were all related to suicide attempts through depression and suicidal ideation. We review each of these relationships below, followed by a discussion of the implications for research and practice.

The most notable contribution of this paper is that it demonstrates an indirect link between specific work design characteristics and threats to personal resources with suicide attempts. Of the work design characteristics, motivational work characteristics (i.e., job autonomy, task variety) were related to suicide attempts through depression and suicidal ideation, suggesting that a lack of such characteristics is detrimental to employee well-being. This finding indicates that the current JCM (Humphrey et al., 2007)—in which work design characteristics are linked to work outcomes via critical psychological states—can be applied more broadly in terms of the well-being outcomes it encompasses. That is, work design features (especially motivational work characteristics) have implications beyond anxiety and stress, including more severe outcomes such as depression and suicide attempts.

Of the threats to personal resources, work-family conflict and family-work conflict were also linked to suicide attempts via depression and suicidal ideation. Employees who experience ongoing conflict between the work and family domains may feel trapped in the struggle, eventually threatening their valued personal resources (Culbertson et al., 2010; Greenhaus & Beutell, 1985). This loss of hope and resiliency is consistent with the COR model, which states that resource loss is often "psychologically threatening" (Hobfoll, 1989, p. 518), and may—according to our findings—be associated with depression and suicidal behavior. Moreover, if emotional transference occurs across domains as well as across partners (given the Spillover-Crossover Model; Bakker & Demerouti, 2013), then this raises concerns about how an employee's negative perceptions impact their spouse's cognitive and emotional state as well.

The relationship between job satisfaction and suicide attempts (as mediated by depression and suicidal ideation) is consistent with the argument that job satisfaction is linked to valued personal characteristics resources, and that it extends beyond perceptions of the work, coloring one's overall state of well-being (Judge & Watanabe, 1993). Although individual and organizational outcomes of job satisfaction have been studied at length (e.g., Spector, 1997), our study is the first to show that job satisfaction also has important implications for suicidal behavior. These results demonstrate that individuals who are happy with their work life are less likely to experience depression, and have fewer thoughts about—and attempts to commit—suicide. In contrast, individuals who are unsatisfied at work may perceive life as hopeless and lacking in meaning, and may exhibit suicidal behavior.

Lastly, depressive symptoms, suicidal ideation, and suicide attempts occur at a relatively low base-rate, which statistically attenuated any observed relationships. Nevertheless, moderate effects were observed for the relationships of multiple antecedents on depressive symptoms, depressive symptoms on suicidal ideation, and suicidal ideation on suicide attempts. Significant small effects were also observed between other antecedents and depressive symptoms. These results suggest that improvements to many aspects of one's work life, particularly job satisfaction, can indeed make a difference in lowering depression and thereby reducing suicidal ideation and suicide attempts in the overall workforce, although any improvements to individual employees may be difficult to detect (as few employees consider or attempt suicide).

Research Implications and Future Directions

Results of this study verify that it is time to reconsider the link between perceptions of the workplace and suicide attempts. Moreover, our results shed light on why the link between occupations and suicide has been inconsistent in the past, and provides support for a employing a within-job approach rather than a between-job approach when studying this relationship. For example, previous work has found high suicide rates among construction workers, agricultural workers, and administrative workers (Gallagher et al., 2008; Meltzer et al., 2008). It is possible that these types of jobs lack the desired job autonomy and task complexity (e.g., administrative jobs), have demands that conflict with juggling work and family roles (e.g., agricultural workers), or have higher rates of job dissatisfaction (e.g., construction workers), thereby presenting an apparent link between occupations and suicide. However, even individuals within these types of occupations have divergent experiences (e.g., Morgeson, Delaney-Klinger, and Hemingway (2005)) study of job autonomy among administrative workers). Thus, researchers should consider *why* certain occupations may have higher suicide rates, and then examine these factors directly in future studies.

Using the present study as a starting point, future studies should continue to integrate existing models of suicide (e.g., Konick & Gutierrez, 2005; Smith & Cukrowicz, 2010) with the occupational health literature to refine the perceptions of the workplace-suicide attempts relationship. When building a model of employee suicide, both the COR model (Hobfoll, 1989) and the JCM (Oldham & Hackman, 2005; Humphrey et al., 2007) may continue to offer insights into which predictors are particularly relevant. For example, the COR model suggests that maintaining and building personal resources (e.g., social support, self-esteem) ought to protect employee well-being, such that employees will be better equipped to handle work stressors (Hobfoll, 1989), and the JCM has identified some of these same resources (i.e., social support) as important social characteristics of the work (Humphrey et al., 2007). Although we did not include social characteristics, researchers are encouraged to consider this dimension in future studies. Related, the JCM includes a number of additional motivational and work context characteristics that should be examined in relation to depression and suicidal behavior (Humphrey et al., 2007).

It would also be beneficial to examine whether personal resources identified in the COR model (e.g., psychological capital; Culbertson et al., 2010) can serve as a buffer for negative work design characteristics identified in the JCM. For example, are employees who maintain high levels of efficacy amidst conditions of low job autonomy more resilient to thoughts of suicidal ideation? Or, is it that they are better equipped to cope with these thoughts when

they do occur? Investigating dynamics such as these would be an important next step in understanding how various perceptions lead to—or protect against—suicidal behavior.

Many of our hypotheses were based on the argument that certain perceptions of the workplace are linked to depression through either promoting or thwarting critical psychological states (e.g., experienced meaningfulness; Humphrey et al., 2007). Future research should directly test these assumptions, examining the specific mechanisms by which certain perceptions are linked to depression and/or suicidal behavior. In addition to meaningfulness, possible mechanisms include hopelessness (Wenzel & Beck, 2008) and burnout (Maslach, 2003). Examining these mechanisms would provide greater insight into the dynamics of suicidal behavior, and create a nomological net around the behavior in an organizational context.

Although our theoretical framework proved useful for developing and testing our hypotheses, two of the six predictors were not related to suicide attempts (namely, physical demands and viewing work-as-career.) Future research should investigate whether other facets of the general constructs they represented (i.e., work context characteristics and satisfying higher-order work needs) are related to suicidal thoughts and/or behaviors (thus supporting the proposed theoretical framework), or whether these relationships are simply tenuous at best (thus indicating the need for a more refined framework).

Finally, boundary conditions of the perceptions of the workplace-suicide attempts relationship should be examined. Examining when perceptions are more or less likely to be linked to suicide attempts not only advances researchers' understanding of the relationships, but also provides insight for managers and employees desiring to improve employee well-being. For example, this study found that work-family conflict and family-work conflict are linked to suicide attempts via depression and suicidal ideation. Yet, certain work resources may weaken these relationships (e.g., family friendly policies, coworker support) while others may strengthen them (e.g., abusive supervision, long work hours).

Practical Implications

This study has important practical implications for managers and employees alike. Given that two motivational work characteristics (job autonomy, task variety) were negatively related to suicide attempts (via depression and suicidal ideation), managers would be wise to provide employees with sufficient flexibility and autonomy on the job. For example, managers can encourage employees to work on a variety of projects and decide how they will accomplish their tasks; additionally, managers can allow their employees to set their own working hours and project deadlines. In doing so, both employees and organizations will benefit, as autonomy has been linked to increased engagement and overall job performance (Oldham & Hackman, 2005; Humphrey et al., 2007).

In an effort to reduce work-family conflict, managers can encourage employees to make use of the company's family friendly policies, including flex-time (flexible work schedules) and telecommuting (e.g., working from home). Availability of these policies has been linked to increased job satisfaction (Grandey & Cropanzano, 1999; Greenhaus et al., 2003), suggesting that managers can address multiple antecedents of depression (e.g., WFC, FWC, job dissatisfaction) by encouraging employees to use the policies and programs available to them. Moreover, overt managerial support of family friendly policies is a key element of a supportive work-family culture, and can reduce employees' reported work-family conflict.

Unfortunately, it is not always possible to change this work conditions and not all organizations provide the necessary family friendly policies. In these cases, organizations can offer trainings on the signs of depression and effective coping strategies as well as provide well-being interventions for employees. Examples of well-being interventions include stress management interventions to help employees cope more effectively with stressors, meditation and mindfulness training to improve focus and relaxation, and civility interventions to promote respect and trust in the workplace (Humphrey et al., 2007).

Limitations

Because we used preexisting data in this study, we had little choice over the measures. As a result, all measures—except depression—consisted of a single item. Prior studies have demonstrated that single-item measures are suitable for certain purposes (Nagy, 2002; Oshagbemi, 1999). For example, Wanous, Reichers, & Hudy (1997)) meta-analytically examined the efficacy of single-item job satisfaction measures, and found the overall mean correlation of these measures with scale measures to be .67. Relatedly, Rimkeviciene et al. (2015)) found that a single-item scale of acquired capability of suicide had an almost identical test-retest reliability compared to a seven-item version of the scale, and single-item scales have been frequently supported as accurate measures of suicidal ideation (Desseilles et al., 2012; Larkin & Beautrais, 2011; Osman et al., 2001; Perkins & Hartless, 2002; Yigletu, Tucker, Harris, & Hatlevig, 2004). In regards to the measures used in this study, the AddHealth database has been used in hundreds of studies (Harris et al., 2009), and few concerns have been noted with the measures. While these measures were not developed in a traditional scale creation study, the accumulation of prior results supports their validity. Nevertheless, the typical concern with single-item measures is their tendency to underestimate relationships, and the results of this paper should be interpreted with this in mind (Bergkvist & Rossiter, 2007; Wanous et al., 1997). Future research should consider reinvestigating these relationships while using multiple-item measures in order to ensure the validity and generalizability of the current results.

Further, some items varied in their timeframes. Some asked participants to respond in regards to the past two weeks, whereas others asked in regards to the past 12 months. A better research design would have a common timeframe for all items. In addition, all measures were self-report. Respondents may have been hesitant to provide certain information, such as suicidal ideation of suicide attempts; however, the noted efforts to reduce this bias when responding to sensitive items, such as listening to the questions through earphones, alleviates this concern.

More advanced research designs would have provided a more rigorous test of the indirect effects, such as cross-lagged designs. The AddHealth database does not include observations for all variables at all time points, however, which prevented the application of such designs in this study. Future research should strive to apply these sophisticated designs.

Lastly, the sample was restricted in age and income. The AddHealth database started collection in 1994, when the participants were approximately 16 years of age. Not enough time has elapsed to gauge the effects of perceptions of the workplace on suicide for older adults using this sample (>30 years of age), and the results should be interpreted with this limitation in mind.

Conclusion

Given the importance of work in individuals' lives, it is time for researchers to seriously reconsider the relationship between perceptions of the workplace and suicide. We attempted to reinvigorate this research by overcoming prior limitations through the use of a large sample, investigating suicidal ideation and suicide attempts as primary outcomes, and analyzing within-occupation factors in predicting suicide. As a result, several perceptions of work design characteristics and threats to personal resources were linked to suicide attempts via depression and suicidal ideation, emphasizing the need for continued study of such relationships.

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