

The Effects of Situational Obstacles and Social Support on Suicide-Prevention Gatekeeper Behaviors

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Abstract. *Background:* Although the effectiveness of suicide-prevention gatekeeper-training programs in improving knowledge, attitudes, and referral practices has been documented, their effects do not seem to be lasting. *Aims:* This study investigated situational obstacles at work that prevent suicide-prevention gatekeepers from engaging in suicide-prevention behavior and the role of social support in modifying the relationship between situational obstacles and suicide-prevention behaviors. *Methods:* 193 gatekeepers completed an online survey to rate the obstacles they had experienced at work since completing a gatekeeper-training program and the support received from coworkers, supervisors, and the organization. Participants also reported the frequency of suicide-prevention behaviors performed. *Results:* The results indicated that both situational obstacles and social support predicted the number of suicide-prevention behaviors performed, as expected. There was also a trend that support from supervisors and the organization may alleviate the adverse effect of situational obstacles on suicide-prevention behavior. *Limitations:* The cross-sectional nature of the study does not allow for directional, causal conclusions to be drawn. *Conclusions:* By understanding the roles of situational obstacles faced by trained gatekeepers at their work and the support they receive from supervisors and organizations, appropriate strategies can be identified and applied to facilitate gatekeeper performance.

Keywords: suicide prevention, gatekeeper training, situational obstacles, social support

Introduction

Recent suicide prevention efforts have focused on training individuals, known as gatekeepers, to recognize a crisis and the warning signs that a person may be contemplating suicide and to refer that person for assessment and care (Quinnett, 2007). While gatekeeper suicide-prevention training programs (e.g., Applied Suicide Intervention Skills Training [ASIST] and Question, Persuade, Refer [QPR]) come in different formats, the common purpose of these training programs is to teach gatekeepers to recognize suicide warning signs, discuss suicidal intent, offer hope, and refer the person in crisis to appropriate services.

Although the effectiveness of these training programs in improving knowledge, attitudes, and referral practices has been documented (e.g., Cross, Matthieu, Cerel, & Knox, 2007; Stuart, Waalen, & Haelstromm, 2003), their effects do not seem to be lasting. For instance, it has been shown that gatekeepers showed a decline in knowledge of suicide

intervention skills 6 months after completing the training program (Moore, 2008). Similar findings have been consistently found in the job training literature recognizing the failure of trainees to apply what they learned in training to real world situations, known as training transfer (Baldwin & Ford, 1988). It has been estimated that only about 10% of what is learned in training has been transferred into behavioral changes on the job (Georgenson, 1982).

Despite the recognition of training transfer as a key criterion to evaluate training effectiveness (Baldwin, Ford, & Blume, 2009), little attention has been paid to the role of training transfer in suicide-prevention training efforts (Cigularov, Chen, Thurber, & Stallones, 2008). This lack of attention has an important implication in suicide-prevention efforts, considering that gatekeeper training has become a common suicide-prevention strategy in a variety of settings, such as schools, government, and private organizations (Gould & Kramer, 2001; Isaac et al., 2009). Thus, it is imperative to investigate the factors that prevent gate-

keepers from applying the learned knowledge and skills after the training program to intervene with potentially suicidal individuals.

The extent to which a gatekeeper transfers learned knowledge and skills after the training program is likely influenced by factors encountered outside the training setting. Arguably, even motivated trainees who intend to apply the skills they learned during training may sometimes be discouraged, inhibited, or prevented from doing so by external factors encountered outside of the training settings (Mathieu & Martineau, 1997; Tannenbaum & Yukl, 1992). Furthermore, many gatekeepers are employed within organizations that provide some sort of social service (e.g., teacher, counselor, social worker, probation officer) and suicide prevention tends to be a secondary “job” for them. Therefore, there is a need to understand to what extent situational obstacles at work would impede gatekeepers’ suicide-prevention behaviors. If so, what can be done to counter these obstacles in practice?

Workplace situational obstacles have been conceptualized as constraints at work beyond the control of the employees, which interfere with their performance (Peters & O’Connor, 1980). In the context of suicide prevention, situational obstacles are workplace factors that directly or indirectly hinder the application of acquired knowledge and skills at work. These obstacles are beyond the control of the workers who received the gatekeeper training and lie within the workplace where the gatekeepers engage suicide-prevention behaviors (e.g., persuade suicidal workers or clientele and refer them to receive adequate mental health services). According to this conceptualization, although a worker may have knowledge about suicide intervention, skills of how to intervene, and motivation to perform the behavior (Campbell, 1990), obstacles arising from the work environment may ultimately inhibit or prevent their performance (Kane, 1997; Peters & O’Connor, 1980). A recent meta-analysis provided strong evidence that situational obstacles are negatively related to job performance (Gilboa, Shirom, Fried, & Cooper, 2008).

Hayden and Lauer (2000) found similar constraints in preventing suicide in school districts, such as insufficient staff, scheduling concerns, liability issues, and negative responses from parents, teachers, principals, administrators, and students. Unfortunately, the suicide-prevention literature has not systematically examined the effects of situational obstacles on gatekeepers’ performance. Thus, it is expected that workers who receive gatekeeper training may engage in fewer suicide prevention behaviors (e.g., identifying or referring suicidal individuals at work) because of situational obstacles arising from their work environment.

While situational obstacles at work likely prevent gatekeepers from playing their role, not all gatekeepers are failing to act. One potential factor that may alleviate the adverse impact of situational obstacles may be social support at work, which has been described as “coping assistance that reduces the harmful impacts of job stressors and strains” (Chen, Popovich, & Kogan, 1999, p. 55). In this study, social support is defined as the encouragement by coworkers, supervisors, and

the organization to apply the knowledge and skills learned in gatekeeper training at work. The training-transfer literature has demonstrated a positive relationship between social support and training transfer (Cromwell & Kolb, 2004; Quinones, Ford, Seago, & Smith, 1995). Therefore, it is expected that support from coworkers, supervisors, and the organization will encourage gatekeepers to apply what they learned in the training program in order to identify and refer suicidal individuals.

Furthermore, Cohen and Wills (1985) posit that social support at work functions as a buffer by mitigating the adverse effects of a poor work environment (e.g., stressful job conditions or situational obstacles) on strains (e.g., poor adjustment, deleterious job performance). In addition, support has been shown to impact work performance by buffering the negative effects of high job demand and low job control (Karasek, 1979; Karasek, Triantis, & Chaudry, 1982). Thus, it is expected that there is a strong stressor-strain relationship when social support at work is low, and a weak or no stressor-strain relationship when social support at work is high. In their meta-analysis, Viswesvaran, Sanchez, and Fisher (1999) found evidence for the moderating effect of workplace support on the stressor-strain relationship. Following the above reasoning, support from coworkers, supervisors, and the organization is expected to buffer the adverse impacts of situational obstacles on gatekeeper suicide-prevention behaviors.

Study Aims

To address the lack of research on factors that either hinder or facilitate suicide-prevention gatekeepers from effectively using their knowledge and skills, the present study examined the roles of situational obstacles and workplace support in gatekeeper-training transfer. A secondary focus of our research was to examine the extent to which social support mitigates the negative effect of situational obstacles on gatekeeper performance. Specifically, the present study makes some unique contributions to the suicide-prevention literature by examining: (1) the adverse effect of situational obstacles on gatekeepers’ suicide-prevention behaviors, (2) the positive effect of workplace support on suicide-prevention behaviors, and (3) the buffering role of support to reduce the adverse effect of situational obstacles on suicide-prevention behaviors.

Based on the literature reviewed above, three hypotheses were proposed and tested:

Hypothesis 1: Situational obstacles at work will be negatively related to gatekeepers’ suicide-prevention behaviors.

Hypothesis 2: Support from coworkers, supervisors, and the organization will be positively related to gatekeepers’ suicide-prevention behaviors.

Hypothesis 3: Support from coworkers, supervisors, or the organization will moderate the relationship between situational obstacles at work and gatekeepers' suicide-prevention behaviors. Specifically, the strength of the negative relationship between situational obstacles at work and gatekeepers' suicide-prevention behaviors will be weaker when support from coworkers, supervisors, or the organization is high compared to when support is low.

Method

Participants and Procedure

A total of 868 gatekeepers who had previously completed a gatekeeper training program (ASIST or QPR) were invited to participate in an on-line survey about situational obstacles they have encountered in the workplace. After receiving two reminder emails, each a week apart, a total of 226 participants had completed the survey. Among them, 33 participants did not provide their job title and were dropped from further analyses leaving 193 participants with complete data. The final response rate for participants with complete data out of those participants who received the recruitment email was 22%. Participants were primarily female (67.4%) and Caucasian (74.1%), with an average age of 39.5. The majority of participants were employed as counselors, probation officers, social workers, and teachers.

The participants in the current study were selected from a database of gatekeepers in a larger evaluation study of the effectiveness of gatekeeper training programs. Participants in the evaluation study were recruited from one of the western states in the US. Individuals who were targeted for the training program (ASIST or QPR) included adults who worked directly with youths aged 10–18, who were enrolled in either the juvenile justice or child welfare systems. The database included 1178 gatekeepers who had completed the training programs from May 2006 to December 2008. However, only those gatekeepers who had completed the training program between May 2007 and December 2008 were selected to participate in this study, resulting in 868 potential participants. This time frame was chosen in order to not overburden participants with follow-up surveys; participants from May 2006 to May 2007 had already completed another follow-up survey.

Using a unique code number, the data collected in this study were linked to the previously collected variables, self-efficacy for suicide prevention, intentions to intervene with a suicidal individual, and usefulness of the training program. These variables were chosen because past research has shown the association between these variables and behaviors after training (e.g., Cheng & Ho, 2001).

There was a significant difference in the distribution of genders between nonrespondents and respondents, $\chi^2(1, N = 158) = 4.82$, with the ratio of women-to-men responders

greater than the ratio of women-to-men nonresponders. The types of occupations of nonrespondents did not differ from respondents. No mean differences were found on self-efficacy for suicide prevention and intentions to intervene with a suicidal individual between respondents and nonrespondents. Respondents, however, rated the training program as more useful ($M = 3.60$) than nonrespondents ($M = 3.47$; Cohen's $d = .32$).

Measures

Situational Obstacles

Situational obstacles were measured with a modified version of the Organizational Constraints Scale (OCS; Spector & Jex, 1998). Five of the items were modified from the OCS and a sixth item was derived based on feedback from focus groups during survey development. The final scale contained six items with six response categories ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). This measure asks participants to indicate their agreement to a number of specific obstacles at work. These obstacles are: "Information about how to appropriately identify and refer suicidal individuals is not available in my organization," "There is a lack of resources for suicide prevention in my organization," "Coworkers would not 'cover for me' when I am dealing with a person in crisis," "There is not enough time at work to adequately perform the role of gatekeeper," "There is not enough privacy at work to talk with an individual who may be at risk of suicide," and "My job does not allow me to use the knowledge and skills that I learned during gatekeeper training." The internal consistency reliability was .71.

Support from CoWorkers, Supervisors, and the Organization

Coworker and supervisor support were measured with five items adapted from a training-transfer climate scale (Krauss, 2005), with six response categories ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). An example item for coworker support is: "My coworkers would not appreciate if I displayed knowledge and skills on the job that I learned during gatekeeper training." An example item for supervisor support is: "My supervisor and I never discuss specific ideas about how to apply my knowledge and skills from the gatekeeper training to my current job." All items were reverse scored so that a higher score indicated greater support from coworkers and supervisors. The internal consistency reliabilities were .56 and .57, for coworker and supervisor support, respectively.

Organizational support was measured using six items modified from the 36-item survey of perceived organizational support (Eisenberger, Huntington, Huntington, & Sowa, 1986). Three additional items were developed spe-

Table 1. Descriptive statistics and correlations for all variables

	Mean	SD	Possible range	Actual range	1	2	3	4	5	6	7	8
1. Situational obstacles	12.92	4.58	8.00–48.00	6.00–25.00	(.71)							
2. Coworker support	4.94	1.01	1.00–6.00	1.00–6.00	–.30*	(.56)						
3. Supervisor support	4.64	0.95	1.00–6.00	1.67–6.00	–.53*	.40*	(.57)					
4. Organization support	4.29	1.01	1.00–6.00	1.67–6.00	–.58*	.31*	.63*	(.90)				
5. Used knowledge and skills from training	2.26	1.18	1.00–6.00	1.00–6.00	–.21*	.14*	.30*	.17*	NA			
6. Shared knowledge with others	3.23	1.05	1.00–5.00	1.00–5.00	–.24*	.07	.39*	.22*	.54*	NA		
7. Screened individuals	3.63	12.02	any whole number	0–100	–.16*	–.05	.20*	.15*	.49*	.25*	NA	
8. Provided mental health services	5.24	13.88	any whole number	0–100	–.22*	–.05	.22*	.21*	.54*	.32*	.61*	NA

Note. NA = not applicable. Values in parentheses on the diagonal contain coefficients α . * $p < .05$.

Table 2. Sample sizes, means, standard deviations, and pair comparisons for individual situational obstacle items

Situational obstacle	N	Mean	SD	% Agree ^e
There is not enough time at work to adequately perform the role of a gatekeeper.	193	2.52	1.30	25.39
There is a lack of resources for suicide prevention in my organization.	193	2.49 ^a	1.28	21.24
There is not enough privacy at work to talk with an individual who may be at risk of suicide.	193	2.24 ^a	1.33	21.76
Information about how to appropriately identify and refer suicidal individuals is not available in my organization.	193	2.22 ^a	1.22	15.03
My job does not allow me to use the knowledge and skills that I learned during gatekeeper training.	193	1.82 ^{a,b,c,d}	1.01	6.74
Coworkers would not “cover for me” when I am dealing with a person in crisis.	193	1.63 ^{a,b,c,d}	0.97	6.74

Note. α was controlled for all pairwise comparisons at .05, two-tailed according to the Dunn critical values.

^aMean difference from “There is not enough time at work to adequately perform the role of a gatekeeper.”

^bMean difference from “There is a lack of resources for suicide prevention in my organization.”

^cMean difference from “There is not enough privacy at work to talk with an individual who may be at risk of suicide.”

^dMean difference from “Information about how to appropriately identify and refer suicidal individuals is not available in my organization.”

^ePercent of agreement was calculated by collapsing the response categories “strongly agree,” “agree,” and “slightly agree” into one category indicating agreement.

cifically for this study. The nine items had six response categories ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). An example item is: “The organization does not value my contribution to suicide prevention efforts.” Higher scores indicated greater organizational support. The internal consistency reliability for this scale was .90.

Gatekeeper Suicide-Prevention Behavior

Gatekeeper suicide-prevention behavior was measured with four items developed for the purposes of this study, which represented four types of suicide-prevention behaviors that gatekeepers may perform following gatekeeper training. Each behavioral outcome was more distal from what is taught in the training program, but more representative of application of skills. Participants were asked to indicate the number of times in the last 6 months that they performed each of the four suicide-prevention behaviors, which were (1) “Using the knowledge and skills learned in training,” (2) “Sharing knowledge with others,” (3) “Screening individuals,” and (4) “Providing mental health services.”

Results

Descriptive statistics, including means, standard deviations, possible ranges, and actual ranges are presented in Table 1. Situational obstacles were positively skewed such that participants in this study tended to experience moderate to low levels of situational obstacles. The distributions for coworker, supervisor, and organizational support were all negatively skewed such that most participants perceived high support from coworkers, supervisors, and the organization. There were no differences in the ratings of situational obstacles or support between those participants who had completed ASIST and those who had completed QPR. Thus, data analyses were conducted based on participants from both groups.

The number of participants, means, standard deviations, percentage of agreement, and mean differences for each of the six situational obstacles are presented in Table 2. The situational obstacles that participants agreed occurred in their workplace most frequently were “There is not enough time at work to adequately perform the role of gatekeeper” (25.4%), “There is a lack of resources for suicide preven-

Table 3. Interactive effects of situational obstacles and social support on suicide prevention behaviors

Dependent variable	Independent variable	Step 1 <i>B</i>	Overall <i>B</i>	ΔR^2	Total R^2
Used knowledge and skills from training	Situational obstacles	-0.07	-0.07	0.03*	0.12*
	Supervisor support	0.26*	0.27*		
	Situational obstacles \times Supervisor support		-0.17*		
Used knowledge and skills from training	Situational obstacles	-0.16	-0.16	0.03*	0.08*
	Organization support	0.08	0.09		
	Situational obstacles \times Organization support		-0.17*		
Provided mental health services	Situational obstacles	-0.15	-0.14	0.04*	0.10*
	Organization support	0.12	0.14		
	Situational obstacles \times Organization support		-0.19*		

Note. * $p < .05$.

tion in my organization" (21.2%), and "There is not enough privacy at work to talk with an individual who may be at risk of suicide" (21.8%). The results of pairwise comparisons (controlling the experimentwise alpha at the .05 level) demonstrate that the situational obstacle, "There is not enough time at work to adequately perform the role of gatekeeper" occurred significantly more often than the other five situational obstacles.

Situational Obstacles, Social Support, and Gatekeeper Suicide-Prevention Behaviors

To examine the proposed hypotheses, correlation and hierarchical regression analyses were conducted. The correlations between situational obstacles, social support (coworker, supervisor, and organization), and the four suicide-prevention behaviors are also presented in Table 1. Overall, situational obstacles were negatively related to all four of the suicide-prevention behaviors, providing support for Hypothesis 1.

Among the three types of social support, support from supervisors and the organization were significantly related to all four suicide prevention behaviors, as predicted, which partially supports Hypothesis 2. There were no significant relationships between coworker support and suicide-prevention behaviors. Therefore, coworker support was dropped from the subsequent hierarchical regression analyses.

The Moderating Role of Social Support

To investigate whether social support moderates the relationship between situational obstacles and suicide-prevention behaviors, the hierarchical regression procedures outlined by Cohen, Cohen, West, and Aiken (2003) were followed. Prior to the analyses, all predictors were centered at their means for ease of interpretation. At the first step, one of four suicide-prevention behaviors was, in turn, regressed on situational obstacles and one of two

types of support (i.e., supervisor and organization). At the second step, an interaction term of situational obstacles by either supervisor or organizational support was entered.

Of the eight analyses conducted, three significant interactions were found (see Table 3). However, when the interaction was graphed, patterns were opposite of what was predicted in Hypothesis 3. These unexpected findings are likely the result of a suppression effect (Tzelgov & Henik, 1991), which is shown in Table 3 where the regression weights of social support increases from Step 1 to Step 2. The presence of a suppression effect in regression makes interpretation of the interaction difficult.

To address this challenge, we conducted a subgroup comparison of correlation coefficients to examine how the relationship between situational obstacles and suicide-prevention behaviors varied under different levels of support. Specifically, if the negative correlation between situational obstacles and suicide prevention behaviors is stronger under low level of support compared to high level of support, there is evidence of the hypothesized interaction. First, high support and low support subgroups were created based on the median scores of supervisor and organization support. Participants with support scores above the median were placed in the high support group, and vice versa.

Differences in the correlations between situational obstacles and each of the four suicide-prevention behaviors for participants with low support (supervisor and organization) and high support were tested. None of these subgroup comparisons were statistically significant. However, the expected pattern of correlations was found. Specifically, the negative correlations between situational obstacles and suicide-prevention behaviors were stronger (more negative) for the low support group compared to the high support subgroup. For example, the negative correlation between situational obstacles and "used knowledge and skills from training" was stronger for the low support group ($r = -.16$) compared to the high support group ($r = -.08$).

Discussion

The most frequently endorsed situational obstacle in this study was that there was not enough time at work to adequately perform the role of gatekeeper. The findings in this study are similar to those found by Hayden and Lauer (2000), with the most common situational obstacles being a lack of time, and insufficient resources.

The present study also showed negative relationships between situational obstacles and suicide-prevention behaviors and positive relationships between support from supervisor and organization and suicide-prevention behaviors, suggesting that both situational obstacles and support from supervisors and organizations may play an important role in impeding or fostering suicide-prevention efforts, respectively.

Although the significant interaction results based on moderated regression analyses were probably not interpretable because of the suppression effect, the result of subgroup comparisons revealed the expected trends in support of Hypothesis 3. Specifically, the negative relationship between situational obstacles and suicide prevention behaviors was stronger for low versus high levels of support.

Although coworker support was not significantly related to suicide-prevention behaviors in this study, it was significantly and negatively related to five of the six situational obstacles. These results suggest that coworkers may be in a good position to reduce some of the obstacles, which may lead to an increase of suicide-prevention behaviors. However, it is also possible that an increase in situational obstacles would lead to a decrease in support from coworkers because there is little that a coworker can do to control the situational obstacles. Therefore, coworker support may have little impact on suicide-prevention behaviors. Given the nonsignificant relationships between coworker support and suicide prevention behaviors found in the present study, the latter explanation seems plausible. Whatever the reason may be, there is a need to untangle the relationship between coworker support and suicide-prevention behaviors in future research.

Implications

Prior job performance literature focusing on situational obstacles (e.g., Peters & O'Connor, 1980) has demonstrated that situational obstacles interfere with ones' performance. Based on prior findings in the job performance literature, as well as the present findings in the context of suicide prevention, it seems practically important to discuss potential strategies to remove obstacles should they occur. Therefore, efforts should be made to remove or reduce situational obstacles at work, or at least address these challenges during the training sessions. One potential strategy to strengthen gatekeeper-training programs is to discuss how to deal with expected situational obstacles beyond the

gatekeepers' control. Acknowledgment during the gatekeeper training program that situational obstacles will likely be encountered at work will give gatekeepers forewarning. As a result, they may prepare for the occurrence of situational obstacles. Furthermore, the gatekeeper-training program could minimize the impact of situational obstacles by allowing participants to generate practical solutions to prepare for the potential challenges and rehearse strategies for overcoming these obstacles.

Even though removal of some situational obstacles may not be feasible in reality, other strategies, such as fostering supervisor and organizational support, will be necessary to reduce the impact. One way to achieve this outcome is through fostering management commitment to remove situational obstacles, as well as increased interactions among workers and management. Zohar (2002) found that an increase in the number of verbal exchanges daily between supervisor and worker resulted in improved safety performance. Simply by interacting with workers, these supervisors send messages to workers that they care for them. Using this approach for gatekeepers may have the effect of increasing suicide prevention behaviors.

Limitations and Directions for Future Research

Although the current study contributes to the understanding of factors that may impede or foster suicide-prevention behaviors at work, several limitations of the research must be considered. First, the results of this study may not be generalized to all suicide-prevention gatekeepers because participants tended to be female and satisfied with the training program. In addition, the response rate (22%) obtained in this internet-based survey was lower than the average (34.6%) based on a recent meta-analysis (Cook, Heath, & Thompson, 2000). Thus, results should be interpreted with caution, even though respondents and nonrespondents were quite similar in terms of background (i.e., occupation) and training evaluation outcomes (i.e., self-efficacy for suicide prevention and intentions to intervene with a suicidal individual).

Second, this study used cross-sectional, self-report data to assess situational obstacles, support, and suicide-prevention behavior. Future studies should consider using different approaches to assess these constructs. Situational obstacles, for example, might be measured through subjective reports from supervisors, coworkers, and gatekeepers. This would allow for a triangulation of measurement strategies that would give a clearer picture of the actual obstacles present. Additional measures of support or interactions can be assessed by observing or recording the number of interactions between worker and supervisor (Zohar, 2003). Suicide-prevention behaviors can also be assessed by supervisors, or recorded across time. In sum, the above limitations can be improved in future research with a strong design

such as utilizing a longitudinal design that would help to untangle the observed relationship between situational obstacles, support, and suicide-prevention behavior.

Third, it is difficult to judge if the level of situational obstacles is typical in the suicide-prevention context without compatible references or benchmarks. In future studies, accumulation of this information will be informative while providing organizations with feedback before or after the training.

The measurement issues in the current study, noted above, along with the mixed support for the buffering hypothesis suggest a need for further investigation of situational obstacles for gatekeepers with improved measurement techniques. While this study demonstrates an association between supervisor/organizational support and suicide prevention behaviors, coworker support was not related. The lack of a positive relationship is not consistent with previous research, which indicates that coworker support facilitates performance (e.g., Rouiller & Goldstein, 1993). Future research should investigate specific providers that gatekeepers seek out for support to determine the importance of support from different sources (i.e., coworker, supervisor). Social network analysis could be applied to understand the web of ties or structure of a social network among support providers and recipients. This approach could answer questions such as how many connections exist between a gatekeeper and his/her support providers, how frequently do they use each of their connections (i.e., how strong each connection is), or which support providers a gatekeeper is most likely to seek out for support.

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References

- Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology, 41*, 63–105.
- Baldwin, T. T., Ford, J. K., & Blume, B. D. (2009). Transfer of training 1988–2008: An updated review and agenda for future research. In G. P. Hodgkinson & J. K. Ford (Eds.), *International review of industrial and organizational psychology* (pp. 41–70). Hoboken, NJ: Wiley.
- Campbell, J. P. (1990). Modeling the performance prediction problem in industrial and organizational psychology. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed., Vol. 1, pp. 687–732). Palo Alto, CA: Consulting Psychologists Press.
- Chen, P. Y., Popovich, P. M., & Kogan, M. (1999). Let's talk: Patterns and correlates of social support among temporary employees. *Journal of Occupational Health Psychology, 4*(1), 55–62.
- Cheng, E. W. L., & Ho, D. C. K. (2001). A review of transfer of training in the past decade. *Personnel Review, 30*(1), 102–118.
- Cigularov, K., Chen, P., Thurber, B. W., & Stallones, L. (2008). What prevents adolescents from seeking help after a suicide education program? *Suicide and Life-Threatening Behavior, 38*, 74–86.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310–357.
- Cook, C., Heath, F., & Thompson, R. L. (2000). A meta-analysis of response rates in web- or internet-based surveys. *Educational and Psychological Measurement, 60*, 821–836.
- Cromwell, S. E., & Kolb, J. A. (2004). An examination of work-environment support factors affecting transfer of supervisory skills in training to the workplace. *Human Resource Development Quarterly, 15*, 449–471.
- Cross, W., Matthieu, M. M., Cerel, J., & Knox, K. L. (2007). Proximate outcomes of gatekeeper training for suicide prevention in the workplace. *Suicide and Life-Threatening Behavior, 37*, 659–670.
- Eisenberger, R., Huntington, R., Huntington, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology, 71*, 500–507.
- Georgenson, D. L. (1982). The problem of transfer calls for partnership. *Training and Development Journal, 36*(10), 75–78.
- Gilboa, S., Shirom, A., Fried, Y., & Cooper, C. (2008). A meta-analysis of work demand stressors and job performance: Examining main and moderating effects. *Personnel Psychology, 61*, 227–271.
- Gould, M. S., & Kramer, R. A. (2001). Youth suicide prevention. *Suicide and Life-Threatening Behavior, 31*, 6–31.
- Hayden, D. C., & Lauer, P. (2000). Prevalence of suicide programs in schools and roadblocks to implementation. *Suicide and Life-Threatening Behavior, 30*, 239–251.
- Isaac, M., Elias, B., Katz, L. Y., Belik, S., Deane, F. P., Enns, M. W., & Sareen, J. (2009). Gatekeeper training as a preventive intervention for suicide: A systematic review. *Canadian Journal of Psychiatry, 54*, 260–268.
- Kane, J. S. (1997). Assessment of the situational and individual components of job performance. *Human Performance, 10*, 193–226.
- Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job design. *Administrative Science Quarterly, 24*, 285–308.
- Karasek, R. A., Triantis, K. P., & Chaudhry, S. S. (1982). Coworker and supervisor support as moderators of associations between task characteristics and mental strain. *Journal of Occupational Behavior, 3*, 181–200.
- Krauss, A. D. (2005). *The transfer problem: Examining the direct and interactive effects of safety training transfer climate and work locus of control on the transfer of safety training*. Un-

- published doctoral dissertation, Colorado State University, Fort Collins, CO, USA.
- Mathieu, J. E., & Martineau, J. W. (1997). Individual and situational influences on training motivation. In J. K. Ford, S. Kozlowski, K. Kraiger, E. Salas, & M. Teachout (Eds.), *Improving training effectiveness in work organizations* (pp. 193–221). Mahwah, NJ: Erlbaum.
- Moore, J. T. (2008, September). *Project SafetyNet: Using the data to inform the future*. Oral presentation given at the Colorado ASIST Trainers Conference, Denver, CO.
- Peters, L. H., & O'Connor, E. J. (1980). Situational constraints and work outcomes: The influences of a frequently overlooked construct. *Academy of Management Review*, 5, 391–397.
- Quinnett, P. (2007). *QPR gatekeeper training for suicide prevention: The model, rationale, and theory*. QPR Institute. Spokane, WA: Author.
- Quinones, J. A., Ford, J. K., Segó, D. J., & Smith, E. M. (1995). The effects of individual and transfer environment characteristics on the opportunity to perform trained tasks. *Training Research Journal*, 1, 29–48.
- Rouiller, J. Z., & Goldstein, I. L. (1993). The relationship between organizational transfer climate and positive transfer of training. *Human Development Quarterly*, 4, 377–390.
- Spector, P. E., & Jex, S. M. (1998). Development of four self-report measures of job stressors and strain: Interpersonal conflict at work scale, organizational constraints scale, quantitative workload inventory, and physical symptoms inventory. *Journal of Occupational Health Psychology*, 3, 356–367.
- Stuart, C., Waalen, J. K., & Haelstromm, E. (2003). Many helping hearts: An evaluation of peer gatekeeper training in suicide risk assessment. *Death Studies*, 27, 321–331.
- Tannenbaum, S. I., & Yukl, G. A. (1992). Training and development in work organizations. *Annual Review of Psychology*, 43, 399–441.
- Tzelgov, J., & Henik, A. (1991). Suppression situations in psychological research: Definitions, implications, and applications. *Psychological Bulletin*, 109, 524–536.
- Viswesvaran, C., Sanchez, J. I., & Fisher, J. (1999). The role of social support in the process of work stress: A meta-analysis. *Journal of Vocational Behavior*, 54, 314–334.
- Zohar, D. (2002). The effect of leadership dimensions, safety climate, and assigned priorities on minor injuries in work groups. *Journal of Organizational Behavior*, 23, 75–92.
- Zohar, D. (2003). The influence of leadership and climate on occupational health and safety. In D. A. Hofmann & L. E. Tetrick (Eds.), *Health and safety in organizations: A multilevel perspective* (pp. 201–230). San Francisco, CA: Jossey-Bass.

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