Title: Decomposing the effect of hardiness in military leadership selection and the mediating role of self-efficacy beliefs.

Running head: Hardiness in military selection

[1] Morten Nordmo, 0000-0002-4776-2286

[2,3] Henrik Ottesen Sørlie, 0000-0003-2532-9980

[4] Ole Christian Lang-Ree, 0000-0003-2648-1140

[2,3] Thomas Hol Fosse, 0000-0002-7063-0441

1: Department of Leadership and Organizational Behavior, BI Norwegian Business School, Oslo, Norway.

2: Department of Psychosocial Science, Faculty of Psychology, University of Bergen, Norway

3. Norwegian Defence Command and Staff College, Oslo, Norway

4: Norwegian Armed Forces Joint Medical Services, Sessvollmoen, Norway

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Abstract

Psychological hardiness is a set of personality characteristics that is linked to better health, performance, and leadership in demanding environments. Research indicates that candidates who score high on hardiness have an advantage during military leadership selection. In this study we deconstruct the effect of hardiness into three separate measures of leadership performance: interview performance, field performance and the probability of voluntary withdrawal from a challenging field exercise. Additionally, we hypothesize that the dispositional effect of hardiness is partly due to an indirect effect of contextual self-efficacy beliefs regarding military leadership ability. We test our hypotheses in a sample of candidates seeking admission to officer training in the Norwegian Armed Forces during a three-week selection process. The results confirm that hardiness was associated with successful admission and showed that hardy candidates scored somewhat higher on the interview and field exercises and were notably less likely to drop out of the field exercise. Using generalized structural equation modeling and mediation analysis we find that the effect is partly mediated by self-efficacy beliefs, but the direct effect of hardiness is more pronounced than the indirect effect of self-efficacy. Overall, the results add to the growing body of hardiness as a predictor of military leadership performance and shows that this advantage is partly, but not primarily associated with contextual self-efficacy beliefs.

Public Significance Statement

Results of this study revealed that a resilient and hardy disposition is an advantage during military leadership selection, especially because they are less likely to voluntary withdraw from challenging a field-exercise. The results point to self-efficacy as an explanation of this finding, where resilient and hardy candidates are more likely to view themselves with a high capacity to produce specific military performance attainments.

Keywords: Hardiness, self-efficacy, military selection, performance

Hardiness is a personality structure defined by dispositional differences in commitment, control, and challenge that functions as resistance resources when faced with stressful circumstances (Kobasa, 1979). Thus, hardiness is relevant for organizations like the military, and measures of hardiness could be used to help decision-making in Armed Forces personnel selection and as a tool for personality development. In support of this, research supports the link between hardiness and successful admission after armed forces selection processes (Hystad et al., 2011; Bartone et al., 2008). While there are several competing psychological constructs that could serve as indicators of resilience, including neuroticism and grit, hardiness has emerged as a more robust predictor of performance in an armed forces context. Neuroticism -the degree to which a person experiences the world as distressing, threatening and unsafe (Widiger, 2009) likely suffers from self-selection in this context and has been shown to be a worse predictor, compared to hardiness in a military sample (Nordmo et al., 2021). Grit – the sustained interest and persistent effort in the passionate pursuit of long-term goals (Duckworth et al., 2007)- is also relevant but has also been shown to be outperformed by hardiness in an Armed Forces context (Maddi et al., 2012). As such. The current study aims to uncover a more detailed understanding of where in the selection process the hardy candidates experience advantages that lead to successful admission. Selection into armed forces may involve a multitude of independent measures, such as interviews, job simulation, aptitude tests, personality tests, physical tests, and demanding field exercises where some candidates quit. As such, simple group wise mean hardiness comparisons of selected and non-selected candidates yield limited understanding because the effect could operate through several different domains during the selection process.

This study aims to make both theoretical and practical contributions to the existing literature. First, the current study will identify where in the military leadership selection process hardiness can contribute to successful admission. Secondly, add to the growing evidence of self-efficacy as a domain-specific and contextual indirect effect under which hardiness exerts its influence on performance. Finally, and relevant for the applied domain, we show that hardiness can be practically applied in a military selection context by providing a study sample of actual candidates in a genuine selection context, using the multiple decomposed results of the selection process as outcome variables.

Hardiness and military performance

Prospective studies show that candidates who score high on hardiness are more likely to succeed during military selection (Bartone et al., 2008) and in military leadership selection

in particular (Hystad et al., 2011). Not all studies show a significant effect of hardiness during military personnel selection, however. Gayton & Kehoe (2015) as well as de Beer & Van Heerden (2014) did not find evidence of differences in hardiness between admitted and non-admitted military personnel after selection. Nevertheless, several lines of research show that hardiness is associated with work performance in an armed forces context (Johnsen et al., 2013; Maddi et al., 2012; Nordmo et al., 2020) as well as military leadership performance (Bartone, 2000; Bartone et al., 2013; Johnsen et al., 2009). Based on these findings, we hypothesized that candidates with high hardiness trait scores are more likely to be admitted after military leadership selection.

H1: Admitted candidates score higher on hardiness compared to non-admitted candidates

Successful admittance in military leadership selection is often the result of a composite score after measuring general mental ability or scholastic aptitude as well as leadership ability measured with interviews and field exercises under stressful conditions (Laurence & Matthews, 2012). Both interview and field scores have been shown to have moderate predictive validity for officer leadership performance (Kjenstebakk, 2012). A hardy personality is associated with school grades as some school achievement is linked to the propensity to avoid or pursue academic challenges (Cheng et al., 2019; Johnsen et al., 2009). However, there is no theoretical link to suggest that hardiness is associated with scholastic aptitude, intelligence, or general mental ability. In addition, empirical research that includes both hardiness and scholastic aptitude does not show a relationship between them (Bartone, 2000). In contrast, both theoretical and empirical research indicate that hardy candidates are more likely to achieve a higher score during a challenging field exercise (Hystad et al., 2011; Johnsen et al., 2013; Maddi et al., 2012). Hardy candidates may also be more likely to achieve a higher score during an interview situation if mental robustness and ability to cope with stress is evaluated and scored. During selection interviews in the Armed Forces, candidates are commonly asked questions pertaining to their own beliefs about performance in relevant contexts or asked to provide examples of how they have performed in similar situations in the past. Both these questions should give hardy candidates an advantage, as perceiving yourself to be hardy, should make it easier to provide convincing answers to such questions than for their less hardy peers. Because of this, we hypothesize that hardy candidates achieve their increased probability of admission to military leadership training not because of higher scholastic aptitude but rather by achieving higher leadership prognosis after the job interview and field exercise.

H2: Hardiness is positively associated with a) interview score and b) field-score.

A key part of many military selection processes is the inclusion of a field exercise where candidates are exposed to scenarios that simulate military missions in challenging combat-like conditions. Candidate`s sleep, meals and overall stress may be considerably altered to measure if candidates can cope with the cumulative fatigue. Many selection processes that include a field exercise also include the option for candidates to self-withdraw their candidacy by quitting. The decision to quit may be due to health reasons but is likely strongly influenced by individual psychological robustness. As such, we hypothesized that the hardy advantage resides not only in increased performance during the field exercise but also with a reduction in the probability of self-withdrawal.

H3: Candidates that voluntarily withdraw from the field exercise score lower on hardiness compared to candidates that complete the exercise

Self-efficacy as an indirect effect of hardiness

The application of hardiness theory in personnel development programs requires empirical groundwork of observation, prediction, and explanation. Attempts at manipulation of and lasting change in hardiness trait scores with interventions would arguably be well served with a detailed understanding of the mechanisms involved in producing the positive outcomes. This understanding can be framed in terms of explaining the direct and indirect pathways by which hardiness exerts its influences and establishing the malleability of these mechanisms and of hardiness trait scores. The evidence regarding the malleability of hardiness is mixed. Some research finds an effect of hardiness training (Maddi et al., 2009), but there is some concern regarding the permanent these changes are. In addition, research in a military leadership setting failed to find evidence of changes in hardiness during military leadership training (Hystad et al., 2017). In contrast, several lines of research and theory suggest that self-efficacy is malleable (Bandura et al., 1999). Personal development programs that aim to increase resilience may be better served targeting self-efficacy mechanisms, compared to hardiness directly.

The importance of uncovering the mechanisms between hardiness and positive outcomes in stressful situations was already addressed three decades ago (Funk, 1992). Since then several mechanisms have been proposed, including cognitive-behavioral pathways (Maddi & Kobasa, 2005). Among these, contextual self-efficacy beliefs - an individual´s

perceived capability to act in a way that creates control over events affecting his/her life (Bandura et al., 1999)- have received some empirical attention (Delahaij et al., 2010; Crosson, 2015). Hardiness and self-efficacy share the same emphasis on perceived control, but it is not clear how hardiness and self-efficacy interact to create higher performance and buffers of stress and both variables have been proposed as moderators (Johnsen et al., 2017) and mediators (Delahaij et al., 2010). According to hardiness theory, hardy individuals meet demanding environments and tasks by remaining involved (commitment), continuously influencing the outcome (control), and by viewing stress as an opportunity to learn and develop (challenge), leading to enhanced performance and health (Maddi, 2006). We suggest that this global disposition to behavior in demanding situations results in more positive experiences, mastery and increased self-efficacy. In this view, hardiness and self-efficacy share similar positive and additive effects, but hardiness is a more stable and global attribute, compared with self-efficacy. As such, we hypothesized a mediating mechanism whereby global hardiness influences domain-specific self-efficacy beliefs that in turn facilitate increased performance. In a military leadership context, this entails that candidates scoring high on trait level hardiness are more successful during military leadership selection because they develop positive contextual beliefs regarding their own ability as a military leader that in turn makes them more resilient to stressors and achieve higher performance. In support of this, hardiness has been shown to be related to an individual's belief in their ability to cope with stress during military training (Westman, 1990). In addition, Delahaij et al (2000) provided evidence of self-efficacy as a mediating contextual mechanism under which hardiness as a global trait exerts its influence in a military sample. However, these findings are limited to self-reported measures of performance and suffer from attrition bias. The current study represents a more robust test of the mediating role of self-efficacy, where the performance measures are not linked via common method bias and two of the four outcome variables of interest are not affected by systematic attrition.

H4: Self-efficacy mediates the relationship between hardiness and a) interview score, b) field-score & c) the probability of withdrawing from the field exercise.

Method

Sample and procedure

The sample consists of 901 candidates applying for officer training in the four branches of the Norwegian Armed Forces. Candidates legal and health records are pre-screened before selection starts. Candidates apply either before or after a one-year mandatory conscription period. As such, most of the applicants are civilians, but some have experience with military service. Most of the admitted candidates complete the officer training and continue a career within the armed forces after this training. There is no gender quota and all participants that appeared for selection were eligible in the study. Participation in the study was voluntary based on informed consent and participants could opt-out at any time during or after the selection process. Participants were informed verbally and in writing that the voluntary study was approved by the Norwegian Armed Forces and Norwegian Social Science Data Service. The sample included 694 males (77%) and 207 females (23%). The mean age was 19.62 (SD = 1.86) with a range of 18-34. Admission into the officer training program is based on both leadership and school prognosis. Preliminary analysis found that there was no significant relationship between either hardiness and school prognosis (r(850) = .054, p = .11) or general mental ability (r(850) = .043, p = .20). The candidates were administered questionnaires measuring hardiness and self-efficacy as a military leader during the first days of the selection weeks process. 139 were removed during initial health screening or tests of general mental ability. 810 candidates were interviewed. From these, 136 candidates were dropped because of poor results on physical tests, self-removal, or other reasons. In addition, 17 candidates were dropped due to poor performance in the interview. 657 candidates entered the second phase of selection and the field exercise. During this phase of the selection process 107 candidates withdrew from the field exercise and thus did not receive a field-score. Dropping out of the field exercise due to self-withdrawal can be due to injury or other factors beyond the candidates' control, but the most common reason for withdrawal is a combination of fatigue and lack of motivation. Poor performing candidates are not removed unless they voluntarily withdraw from the exercise which automatically excludes them from the admission process. 550 candidates completed the field exercise. From these, 440 candidates were admitted and 110 were not.

Measures

Self-efficacy as a military leader was measured with a seven-item scale designed for use in the Norwegian Armed Forces (Buch et al., 2015). The scale is designed to evaluate beliefs regarding the candidate's performance as military leaders and cadet training to become an officer with seven response options (1 = Completely disagree, 7 = Completely agree).

Example items include "*I am capable of receiving high marks as a military cadet*". Omega reliability for the measure was 0.84. Hardiness was measured with the Norwegian version of the revised 15-item dispositional resilience scale (DRS-15-R) (Hystad et al., 2010). Answers are recorded as the level of agreement on a four-point scale (1 = *Completely disagree*, 4 = *Completely agree*) on three subscales: Challenge, commitment, and control. Omega reliability was 0.69 on the total scale.

The field exercise is scored on a leadership scale from 1-9 based on perceptions of the candidate on five leadership factors: Role-model, self-development ability, ability to work well with others, task performance and mental robustness. The interview is scored on three of these: Role-model, self-development ability and mental robustness. The scoring system is based on a leadership model which is a modified variant of Yukl`s (2012) hierarchical taxonomy of leadership behavior. The main difference is the inclusion of mental robustness and a translation of task performance into the ability to complete missions and stay on task when faced with challenges. Trained and experience officers score the interview and field exercise on the five sub-factors. A composite mean score on these three and five factors yields the final interview and field exercise score. Specific scores for sub-facets were available, but previous research on the same scoring system and leadership measurement warns against the use of specific factors as they are highly correlated and likely reflect a strong global evaluation (Skoglund et al., 2021). Nevertheless, the global evaluation leadership score from both interviews and the field exercise predicts later leadership performance during the training period (r. = .24) (Lie, 2018). Additionally, three measures are taken to reduce random noise and systematic differences between raters during the training exercise: Behavioral indicators, officer/psychologist second opinion and group review.

Statistical analysis

All analyses except for restriction of range correlation correction were conducted with STATA 16.1 (StataCorp, 2019). The restriction of range correction was calculated with R (Rcore, 2020). We calculated tests of standardized mean differences in hardiness between the groups using independent samples Welch T-tests and Cohen's D to test hypothesis 1 and 2. Hypotheses 3a and 3b were tested with generalized structural equation modeling (GSEM) using hardiness as a predictor on interview and field scores as well as the probability of withdrawing from the field exercise without self-efficacy as a mediator. The binary variable of self-withdrawal was set to binomial (Bernoulli family) and logistic link. We also tested the group mean hardiness differences between candidates who completed the field exercise but

were not admitted as well as admitted candidates against the candidates who withdrew from the field exercise using categorical regression. To correct for range restriction, we calculated the restriction-of-range-corrected correlations between hardiness and the outcome variables using Thorndike's case 2 (Sackett & Yang, 2000) and the Psych package (Revelle, 2015). Thorndike's case 2 assumes that relationship between the predictor (hardiness) and outcome (performance) is restricted because the predictor is used to choose the subjects as a function of self-selection. This range of restriction is corrected for by using the discrepancy between the sample variance and a known population variance. The unrestricted hardiness standard deviation was from a Norwegian working sample of adults (Reknes et al., 2018).

Hypothesis 4 was determined using two separate methods. First, we decomposed the direct and indirect effects of hardiness and self-efficacy on interview and field exercise score using the medsem package (Mehmetoglu, 2018) to obtain confidence intervals. We also used logistic mediation with the paramed package (Emsley & Liu, 2013) and GSEM to account for the binary data on self-withdrawal or not during the field exercise. Confidence intervals were obtained with the delta-method and a 500 bootstrapped sample. We also used a constraint-based test of the consequences of setting the indirect or direct effect to zero using GSEM, to investigate the relative effect of the indirect and direct effect. Eight nested models with constrained direct effects or indirect effects on the studies three outcome variables, were compared with the unconstrained model. Data is available upon request from the first author.

Results

Descriptives and tests of mean differences

Descriptive statistics are presented in table 1. The results show that self-efficacy shows a ceiling effect, where 65 participants (7.3%) have the highest possible self-efficacy score. The mean hardiness score is notably higher compared with a Norwegian sample with less variance (Reknes et al., 2018).

Table 1

Descriptive statistics, correlations & mean differences by admission status

Variable	Admitted		Non-admitted		SMD*	Correlations
	Mean	SD	Mean	SD		
Hardiness	3.33	0.27	3.23	0.30	0.35*	-

Self-efficacy	6.27	0.59	6.03	0.64	0.42*	.34*	-		
Interview performance	19.60	3.96	16.69	4.82	0.66*	.14*	.14*	-	
Field exercise performance	30.74	6.93	16.53	7.85	1.75*	.09*	.10*	.26*	-

*Note.* Standardized Mean Difference (SMD) = Cohen`s D & Welsch T-test * p < .05

Hypotheses 1 stated that admitted candidates would score higher on hardiness, compared to non-admitted candidates. This hypothesis was confirmed $t(849) = 5.17$, $p < 0.001$, with a small/moderate effect size. Admitted candidates also scored higher on self-efficacy, $t(892) = 6.34$, $p < 0.001$, compared with non-admitted candidates with a moderate effect size (Cohen`s D = 0.42). The results also confirm that the field performance is weighted as more important in the selection of candidates, compared to the interview performance.

The results from the categorical regression show that the mean hardiness was higher for candidates completing the field exercise (B = 0.10, SE = 0.03, p = .003), but not being admitted as well as admitted candidates that completed the exercise (B = 0.12, SE = 0.02, p > .001), compared with candidates that withdrew from the field exercise, as shown in figure 1. The difference in hardiness between candidates who completed the exercise but were not admitted and admitted candidates was non-significant (B = 0.03, SE = 0.03, p = .41).

Total effect of hardiness on leadership outcomes

Marginal estimates and predicted values from the GSEM model of total effect of hardiness on leadership outcomes can be seen in figure 1. The results show a positive effect of hardiness on interview score (B = 2.18, SE = 0.57, p < .001), field score (B = 4.11, SE = 1.46, p = .005) as well as the probability of withdrawing from the field exercise (b = -1.28, SE = 0.27, p < .001), confirming hypothesis 3. The effects are small, however, as hardiness only accounts for about one percent of the variation in interview performance (R^2 = .017), less than one percent of the variation of the field-performance (R^2 = .008). The effect size is somewhat more pronounced on the probability of withdrawing from the exercise (R^2 = .023). Correcting for restriction of range in the hardiness measure increases the effect size on interview performance (R^2 = .031), field-performance (R^2 = .014) and the probability of withdrawing from the field exercise (R^2 = .049). The increase after correction shows how

restriction of range decreases the observed impact of hardiness in self-selected samples.
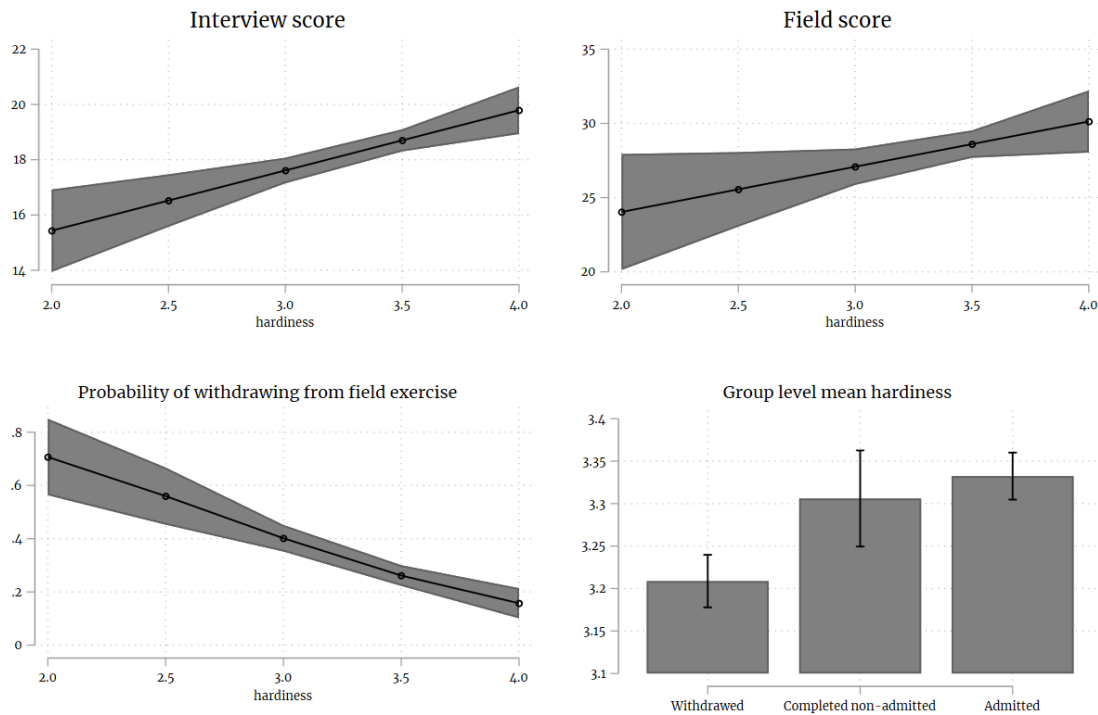
Figure 1. *Predicted values of hardiness on interview and field performance as well as the probability of dropping out and group mean hardiness level of candidates withdrawing, admitted and non-admitted candidates that did not withdraw from the field exercise.*

Mediating effect of self-efficacy

The results from the full model with self-efficacy as a mediator can be seen in figure 2. The model shows a significant relationship between hardiness and self-efficacy (B = 0.69, SE = 0.07, p < .001). Within the mediation model the relationship between self-efficacy and field score becomes non-significant.
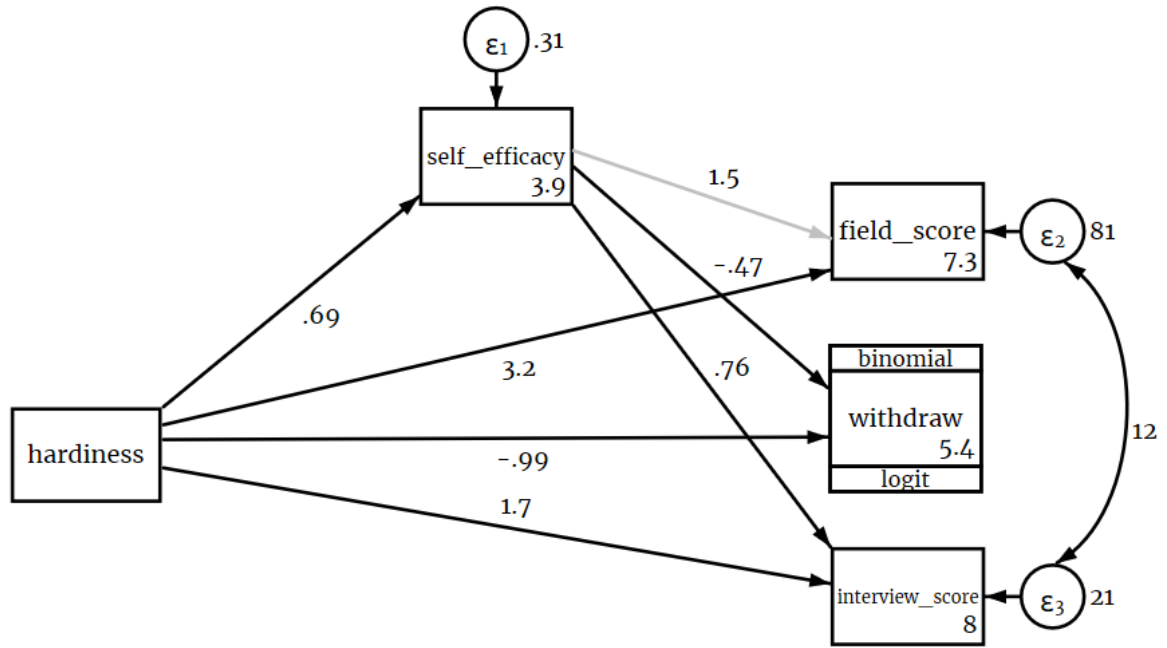
Figure 2. *Unconstrained model of direct and indirect effects of hardiness and self-efficacy on military leadership outcomes using generalized SEM. Non-significant path marked in grey*

The results from the mediation analysis showed a significant indirect effect of self-efficacy on the relationship between hardiness and interview performance ($b = 0.032$, SE = 0.013, p = 0.015, 95% CI 0.007-0.058), confirming hypothesis 4a. The results supported partial mediation where approximately 23% of the effect of hardiness was mediated by self-efficacy. The results did not support an indirect effect on field-score ($b = 0.028$, SE = 0.015, p = 0.066, 95% CI -0.002-0.057). The results from the paramed mediation analysis on the probability of withdrawing from the field exercise showed a significant indirect effect of self-efficacy ($b = 0.72$, p = 0.001, 95% CI 0.59-0.88), confirming hypothesis 4c.

Comparing direct and indirect effects with model constraints

The χ^2 likelihood ratio tests revealed that every constrained model showed significantly worse fit compared with the unconstrained model, except for the no indirect effect model of self-efficacy on field performance, mirroring the non-significant mediation results, as seen in table 2. The results show that constraining the direct effect of hardiness procedures somewhat lower model fit, compared with models that constrain the indirect effect of self-efficacy. This pattern of results was found on field scores, interview scores, the probability of dropping out as well as when all three outcomes were constrained. Among the

individual outcome variables, model fit showed the most substantial drop when the direct effect of hardiness is constrained to zero on the probability of dropping out of the field exercise. Overall, the results indicate partial mediation on interview score and probability of self-withdrawal, but a more robust direct effect compared with the indirect effect via self-efficacy.

Table 2
Nested model comparisons of unconstrained model with constrained direct and indirect effects of hardiness and self-efficacy on three leadership outcomes during military leader selection.

Model	AIC[1]	BIC[1]	-LL	χ^2 lr-test
Unconstrained full model	10518.6	10589.7	5244.3	-
No indirect effect of self-efficacy on field-performance	-2.0	3.0	5246.1	3.7(1)
No direct effect of hardiness on field-performance	-2.4	2.3	5246.5	4.4(1)*
No indirect effect of self-efficacy on interview-performance	-4.4	0.4	5247.5	6.3(1)*
No direct effect of hardiness on interview-performance	-6.0	-0.9	5248.1	7.6(1)**
No indirect effect of self-efficacy on field drop-out	-9.0	-4.5	5249.9	11.2(1)**
No direct effect of hardiness on field drop-out	-9.7	-4.9	5250.1	11.7(1)**
No indirect effect of self-efficacy	-14.0	0.6	5254.1	19.6(3)**
No direct effect of hardiness	-16.0	-1.4	5255.1	21.6 (3)**

[1]*Note. Constrained – unconstrained model. * p > .05 ** p > .01.*

Discussion

The aim of this study was to explore where in the military leadership selection process high hardiness candidates outperform low hardiness candidates, and whether this effect is mediated by individual differences in contextual self-efficacy. With regards to the effect of hardiness on admittance, our results replicate those of Hystad and colleagues (2011) with comparable, although slightly larger, effect size (Cohen's *d* = .35 vs. *d* = .28). Mean level hardiness differences between groups were partly due to a small association of hardiness with interview and field-scores but more robustly linked with a reduced propensity to withdraw from the field exercise. The notable share of non-admitted candidates that were due to self-withdrawal during the exercise, indicates that merely completing the field exercise is a

challenge. The results of the present study show that high levels of hardiness may act as a protective factor against self-withdrawing from the field exercise. The lack of significant differences in mean hardiness between admitted candidates and non-admitted candidates that completed the exercise underscores this effect. The finding that hardiness primarily impacts voluntary self-withdrawal may contribute to explain why some research finds an effect of hardiness on military selection outcomes, and other research on hardiness does not. Both Gayton and Kehoe (2015) as well as de Beer and Van Heerden (2017) reported that only a small subsample of candidates in their sample withdrew at their own request during the selection phase. This may render the protective effect of hardiness against the probability of self-withdrawal too small to influence the admitted/non-admitted outcome. In contrast, the admission status of candidates of the current study as well as Hystad (2011) and Bartone et al. (2008) are based on a significant portion of voluntary withdrawal during the selection phase.

The effect sizes are in line with similar research linking hardiness to successful leadership (Bartone, 2000). When corrected for restriction of range, the effect sizes for all outcomes increase notably resulting in a moderate association with self-withdrawal but remain small for field and interview performance. The results also partly support the hypothesis that hardiness exerts its positive influence on outcomes via contextual self-efficacy beliefs, confirming previous findings (Delahaij et al., 2010) on two of our three mediation hypotheses. Hardy candidates were more likely to perceive themselves as capable applicants which in turn is associated with increased interview-performance and a reduced likelihood of self-withdrawal. The non-significant indirect effect on field-performance may indicate differing operating mechanisms but is also due to lower statistical power on this outcome. The indirect effect on withdrawal and interview performance shows how a propensity towards higher self-efficacy may create a positive cyclical loop and explains some, but not all the hardy advantages. The indirect effect of self-efficacy on interview performance amounted to around 25% of the total hardiness effect, and 20% of the total effect on field performance. As such, there is considerable variance not accounted for by the indirect effect. This finding is further supported with model comparison and is taken to mean that increased self-efficacy is one, but not necessarily the primary pathway in which hardiness operates through.

These findings have implications that are informative for the military selection process, where there is an emphasis on psychological robustness (Bartone, 2013). Specifically, the results explain where individual differences in hardiness matters most in the selection phase, as a protective factor of self-withdrawal. This is an important finding as measures of hardiness, which are cheap and easy to administer, have some predictive power

on the most difficult and resource intensive part of military selection: The field exercise. Personell psychologist may use hardiness scores if constraints are put on the number of candidates allowed to continue from a screening phase to the more costly field exercise phase. The strength of the relationship between hardiness and self-withdrawal does not, however, mean that the field exercise can be replaced in its entirety with hardiness scores. The results conversely show the selection value of a challenging field exercise for separating the hardy and less hardy candidates. Secondly, it provides a practical insight into how to conceptualize psychological robustness into a measurable concept. Mental robustness and emotional stability are important features in military leadership performance but knowing exactly what to look for during military leadership selection, is not entirely clear. Especially when the traditional measure of neuroticism is less successful in predicting performance (Nordmo et al., 2020). Defining psychological robustness in terms of candidates' beliefs regarding control, challenge and commitment from hardiness theory may prove a fruitful and useful conceptualization in military settings. In addition, the indirect effects of self-efficacy present a malleable pathway and mechanism that can also be used in programs that seek to increase the resilience of servicemembers. The malleability of self-efficacy (Bandura, 1999) also implies that performance in real world military selection is not fixed.

Methodological considerations and future directions

The main limitation of the current paper is the lack of temporal control between the hardiness and self-efficacy measures. Instead, we rely on theory to predict that a global and more stable hardiness disposition is the foundation for subsequent self-efficacy beliefs (Kobasa, 1979; Maddi, 2006). The current study does not allow for interpreting the causal nature of the indirect self-efficacy effect as many alternative models exist. Future research would do well to remedy this by measuring hardiness trait levels at one time point and measuring changes in self-efficacy scores from one time point to the next. An autoregressive cross-lagged design would be particularly well suited to ruling out competing common method models as well as the temporally reverse effect of self-efficacy on hardiness. Another limitation with the current study is not being able to identify why candidates withdrew from the field exercise. The presence of multiple differing reasons for self-withdrawal may have biased the parameter estimates for the direct and indirect effect of hardiness on self-withdrawal. Secondly, the measurement of hardiness has lower reliability. In addition, generalizing the findings of the current study to a selection setting is dependent on the measurement equivalence of the hardiness measure in selection vs. research contexts. Lastly,

we also observed a slight ceiling effect on self-efficacy, which reduces statistical power.

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