

## **Personality and Hardiness differences between Norwegian Police and Psychology Students**

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### **Author Note**

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. Correspondence concerning this article should be addressed to Tom H. Skoglund, Norwegian Armed Forces, Postboks 800, Postmottak, 2617 LILLEHAMMER, Norway.

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### **Data availability statement**

Psychological data of future police officers are considered sensitive. Thus, the data used in this study cannot be openly available. Request for data can be sent to the Norwegian Police University College at [postmottak@phs.no](mailto:postmottak@phs.no).

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### Abstract

The present study investigated: (1) differences in personality traits and hardiness between police and psychology students, and (2) the relationship between personality traits and hardiness. To achieve these aims, we obtained scores using the Big Five Inventory-20 and the Dispositional Resilience Scale-15-R from  $n = 125$  police students and  $n = 177$  psychology students. Police students relative to psychology students, as expected, scored significantly higher on extraversion, conscientiousness, and emotional stability, and lower on openness. Further, the police students scored higher than psychology students on agreeableness, which was unexpected. For hardiness, police students also scored significantly higher than the psychology students. There was, however, no significant difference for the hardiness component of control. All Big Five traits (except agreeableness) predicted hardiness in a stepwise regression, where emotional stability was the strongest isolated predictor ( $\beta = .40$ ). When treating hardiness as a dichotomized variable, for identifying those especially low or high on hardiness, openness was the strongest predictor for the high hardiness group:  $OR = 1.69$  (95% CI 1.24-2.30). Margin plots revealed that increases in Big Five trait scores, except agreeableness, elevated the probability of belonging to the high hardiness group independent of field of study. We conclude that there is some support for a Norwegian ‘police student personality’. Additionally, we discuss nuances in the personality-relatedness of the hardiness construct based on results from a linear- and logistic regression, respectively.

**Keywords:** Personality, Big Five, Hardiness, police students

## **Personality and Hardiness differences between Norwegian Police and Psychology Students**

Police work is multifaceted, requiring officers to adapt to and manage a wide variety of roles and potentially stressful situations (Purba & Demou, 2019). Even though the law and police guidelines provide officers direction on how to handle different assignments, job performance, and the way duties are carried out are often influenced by individual characteristics, such as personality (Barrick & Mount, 1991; Forero et al., 2009; Landman et al., 2016; Varela et al., 2004). In addition to personality, a growing body of research concerning individual differences relevant to police work has focused on psychological hardiness (Barton et al., 2004; Johnsen et al., 2017; Sandvik et al., 2019), a personality-related construct that concerns the individual's ability to cope with challenges or stressful situations (Bartone, 1995; Kobasa, 1979). Accordingly, the purpose of the present study was to investigate if future police officers are distinct in these characteristics by comparing the Big Five personality traits and hardiness between Norwegian police and psychology students. Additionally, this study explored the Big Five relatedness of the hardiness construct.

One of the most widely acknowledged personality models is the Big Five taxonomy, also referred to as the five-factor model (Widiger, 2017). The Big Five taxonomy describes personality as compiled of five traits that all people have to a greater or lesser extent. The personality traits are usually named: extraversion (E), agreeableness (A), conscientiousness (C), neuroticism (N) or emotional stability (ES), and openness to experience (O) (Digman, 1990; John et al., 2008; John & Srivastava, 1999). The Big Five Inventory (BFI-44) is a widely used self-report questionnaire developed to capture the prototypicality of these traits. In the current study we used a short form measure derived from the BFI-44, the BFI-20. The 20 items of the measure were selected on the basis of having good psychometric qualities (by measures of structural validity, maximal representation, maximal stability over time, and

maximal criterion validity) (Engvik & Clausen, 2011). The scale names the five personality dimensions: extraversion (e.g., talkative, outgoing), friendliness (e.g., caring, friendly), control (e.g., well-organised, conscientious), emotional stability (e.g., careless, not nervous), and fantasy (e.g., creative, imaginative) – which corresponds to E, A, C, ES (reversed N), and O.

On the other hand, hardiness concerns the individual's ability to influence, control, and create meaning from life events – a personality-related factor that acts as a buffer between stressful situations and the individual's reactions. Roughly speaking, hardy individuals manage stressful situations in constructive ways that contribute to coping and personal growth (Hystad & Johnsen, 2019). The construct is measured through three, interacting components, the three C's: commitment (the ability to involve oneself in tasks and activities and perceive these as meaningful and interesting); control (the individual's belief in their ability to influence a course of events and its outcomes); and challenge (a pro-active stance concerning the individual viewing life challenges as opportunities for learning and development). In early studies on hardiness, Bartone (1995) created the 30-item "Dispositional Resilience Scale" to measure the construct. This scale later led to the development of the 15-item version called "The Short-Hardiness Scale" or DRS-15-R (Hystad et al., 2010; Johnsen et al., 2004), which was applied in the current study.

### **Previous research**

Several studies have assessed personality profiles of police students and trainees (e.g. Chibnall & Detrick, 2003; Detrick et al., 2004; Du Preez et al., 2009; Ghazinour et al., 2019; Lorr & Strack, 1994), but research explicitly targeting the Big Five taxonomy is scarce. There is, however, a considerable amount of research on the Big Five traits of working police where studies have reported that high levels of C and E, and low levels of N (i.e., high levels of ES),

are typical personality features of police officers (Abrahamsen & Strype, 2010; Barrick & Mount, 1991; Black, 2000; Detrick & Chibnall, 2006; Detrick & Chibnall, 2013; Grubb et al., 2015). If we turn to hardiness, even though some studies have employed the DRS-15-R on police student samples (e.g., Johnsen et al., 2017; Sandvik et al., 2019), this research did not compare the level of hardiness with other student groups. Thus, the present study will contribute to 'new' police student personality and hardiness insights.

Considering the personality-relatedness of hardiness, the association between Big Five traits and ways of coping with stress has long been an area of interest for discussion and research (e.g., Costa et al., 1996; Vollrath & Torgersen, 2000). Research investigating resilience factors is thus naturally relevant in personality research. For example, Oshio et al. (2018) performed a metaanalysis demonstrating average correlations of moderate strengths ( $r = .31-.46$ ) between different resilience measures and all Big Five traits. Using a hardiness measure developed in Spain, Merino-Tejedor et al. (2015) reported that the total score correlates negatively with N (-.25) and positively with the other traits of E (.15), A (.12), O (.10), and C (.36). However, somewhat different results were reported by Bartone et al. (2009) when using a DRS measure. In this study, non-significant correlations emerged for A and O, and weak correlations were found for N (-.25), C (.18), and E (.11). Our study contributes to further findings on this matter, in which different results are observed. Also, to the authors' knowledge, no research has examined the relationships between the BFI-20 as the personality measure and the DRS-15-R. In this respect, the current study also aims to provide new knowledge by examining these measures' relationships.

### **Study aims and hypotheses**

In another study based on a different sample of police students (Risan et al., under review), it was concluded that the BFI-20 and DRS-15-R can provide useful knowledge of

individual characteristics in a police training context. The current study aims go one step further by investigating the distinctiveness of police students' profiles at a group level by comparing them to a sample of psychology students. For this purpose, we used a quantitative cross-sectional study design by administering the two measures BFI-20 and DRS-R-15 at the same time. We tested hypotheses concerning expected individual differences between police and psychology students (outlined below). Another aim was to replicate findings related to the personality-relatedness of the hardiness construct. Therefore, we investigated to what degree the Big Five traits could explain the variance in hardiness and, additionally, whether the Big Five traits could predict a high hardiness group, consisting of individuals scoring exceptionally high on the DRS-15-R.

**Differences between police and psychology students.** Based on past research showing that police officers have reported high levels of C and E and low N levels (Abrahamsen & Strype, 2010; Grubb et al., 2015), we hypothesized that this pattern would also emerge in the current study when comparing student samples of police and psychology students. Additionally, we hypothesized that psychology students would score higher on A and O relative to police students. Considering our expectations for A, this was due to a belief that psychology has a focus on the very nature of human beings, rather than on security issues and the law. Perhaps such a focus in psychology might attract students with a tendency to understand and care for others, which corresponds to high A levels. Being a typical academic study appreciating idea formation and novel thoughts, psychology students were also believed to be higher on O than police students. Arguably, basic police training is more practical and rule-bound relative to typical academic training. As such, police studies might attract those that are more moderate in O levels when compared to those attracted to typical academic studies. We expected these personality differences to emerge when controlling for age and sex and, thus, formed the following hypothesis:

H<sub>1</sub>: Police students will score significantly higher on E, C, and ES, and significantly lower on A and O, relative to psychology students – even when controlling for age and sex.

We hypothesized further that police students would score higher (including all three components) than psychology students with regard to hardiness. Not only are the police students selected based on their potential for coping with stress, but we also assume that those who consider themselves hardy individuals are more likely to be attracted to studies in policing than psychology. We expected the difference to emerge also when controlling for age and sex.

H<sub>2</sub>: Police students will score significantly higher on the three components of hardiness relative to psychology students – even when controlling for age and sex.

**Big Five predictors of hardiness.** Considering the personality-relatedness of resilience factors, as demonstrated in the comprehensive meta-analysis by Oshio et al. (2018), we expected all Big Five traits to be significant positive predictors of hardiness when controlling for age, sex, and field of study. The results reported by Merino-Tejedor et al. (2015) also supported such an expectation, although we notice that Bartone et al. (2009) found non-significant correlations with regard to A and O. Furthermore, based on the same reasoning but by dichotomizing the hardiness variable, we expected that increases in the Big

Five trait scores would strengthen the probability of belonging to a high hardiness group, independent of the field of study.

H<sub>3</sub>: All Big Five traits will significantly and positively predict hardiness after accounting for age, sex, and field of study – and high Big Five trait scores will increase the probability of belonging to a high hardiness group independent of field of study.



## Method

### Samples

To become a police officer in Norway requires completing a bachelor's degree from the Norwegian Police University College. Admission to the program is determined by applicants' prior academic achievements and a selection process evaluating medical, physical, and psychological suitability (Skoglund, 2018). We invited all 405 first-year students in 2020 to participate in the study. Participation was voluntary and not compensated. The final sample size was  $n = 125$ , resulting in a response rate of 31%. There were 54 males and 66 females, ages 18 to 31 ( $M = 22.41$ ,  $SD = 2.46$ ), in the police student sample.

We distributed the same questionnaire to undergraduate psychology students at Oslo New University College. This private tertiary university college offers three-year bachelor's degree programs in applied or health psychology. It is also possible to attend a year of study in general psychology. The academic admission criterion to these programs is obtaining "a general university admission certification", which is usually the result of a Norwegian mainstream high school diploma. Amongst the three psychology programs in the fall of 2020, 486 students enrolled – and all were invited to participate in the present study at the end of their first semester. The final sample size was  $n = 177$ , resulting in a response rate of 36%. There were 18 males and 160 females aged 18 to 54 ( $M = 26.97$ ,  $SD = 8.75$ ) in the psychology student sample.

### Measures

**BFI-20.** The Big Five Inventory-20 (BFI-20) contains 20 items developed to measure the prototypicality of the five personality traits of E, A, C, ES, and O, using a 7-point self-report scale. This short measure was derived from the BFI-44, and the 20 item Norwegian version has demonstrated sound psychometric properties regarding internal consistency, test-retest reliability, and representativeness (Engvik & Clausen, 2011). Cronbach's alpha values

of the five traits in the total sample in the present study (including both student categories) were .83 (E), .53 (A), .65 (C), .77 (ES), and .96 (O).

**DRS-15-R.** The Dispositional Resilience Scale-15-R (DRS-15-R) contains 15 items on a 4-point self-report scale, to measure the three components of commitment (CO), challenge (CH), and control (CO) – and a general hardiness dimension. A Norwegian version has shown adequate psychometric properties (Hystad et al., 2010). For the total sample in the present study, Cronbach's alpha values were .73 for the general hardiness dimension, and .76 (CM), .61 (CH), and .63 (CO) for the components.

## **Procedure**

Acknowledging that the BFI-20 and the DRS-15-R are free to use for research purposes, we digitalized all items using Microsoft Forms. Police and psychology students were invited to participate through institution e-mail systems and they were also orally informed of the study. The Norwegian Social Science Data Service, the Norwegian Police University College, and Oslo New University College ethically approved this study.

## **Statistical Analyses**

STATA 16 (StataCorp., 2019) was used for all statistical analyses. Sum-scores of the Big Five traits and total hardiness and its components were used throughout. All study variables were correlated. The analyses used list-wise deletion of cases for handling missing data. Five participants did not report sex, and one did not report age. For the sum-scores of the BFI-20 and DRS-15-R there were 1-5 and 3-8 missing cases, respectively. Initial inspections of normality, linearity, multicollinearity, and homoscedasticity did not reveal any serious violations of the statistical assumptions.

For testing H<sub>1</sub> and H<sub>2</sub>, the trait scores of the BFI-20 and the total hardiness score and its components were respectively regressed on the field of study variable while using sex and

age as covariates for obtaining statistical control. The null hypotheses, indicating no group differences, were kept if the probability of the field of study regression coefficients were above .05.

For testing H<sub>3</sub>, first, a hierarchical regression analysis (Bern, 2005) was performed using hardiness as the dependent variable when entering sex, age, and field of study in step 1 and the BFI-20 trait scores in step 2. The second part of H<sub>3</sub> was tested by dichotomizing the hardiness variable for the total sample. As recommended in earlier research (Funk, 1992; Ramanaiah et al., 1999), we categorized those who scored above the median on all three components as hardy individuals. Non-hardy individuals were those who scored below the median of all three components. This resulted in a high hardiness and low hardiness group. The median scores in the present study were 17 (CM), 13 (CH), and 18 (CO). This resulted in 38 and 31 respondents respectively in the low hardiness and the high hardiness groups, which constituted 23% of the total sample. There were 7 police students and 31 psychology students in the low hardiness group, while there were 18 police and 13 psychology students in the high hardiness group. The dichotomized hardiness variable was then regressed on the trait scores of the BFI-20 for calculating Odds Ratios. After that, we calculated margin plots for visualizing different probability values of belonging to the high hardiness group to varying scores on the BFI-20 traits for both fields of study. Inspection of differences or similarities in these probability plots indicated whether field of study or Big Five traits best predicted the high hardiness group.

## Results

Figure 1 and 2 depicts the scores on the BFI-20 and the DRS-15-R for police and psychology students and show the mean score differences across the field of study. As can be further seen in Table 1, several group differences exist between police and psychology students. Additionally, there is a shared variance between the Big Five traits and hardiness.

<Table 1>

<Figure 1>

<Figure 2>

For testing  $H_1$  and  $H_2$ , dummy-variable regressions were performed using sex and age as covariates. When controlling for the possible influence of these demographic variables, statistically significant differences between police and psychology students were seen for all Big Five traits: E ( $B = -3.04, t = -4.87, p < .001$ ), A ( $B = -2.09, t = -5.35, p < .001$ ), C ( $B = -3.41, t = -7.30, p < .001$ ), ES ( $B = -5.65, t = -9.78, p < .001$ ), and O ( $B = 1.30, t = 2.03, p < .05$ ). Regarding hardiness, and its three components, statistically significant differences between police and psychology students for CM and CH emerged, but not for CO: CM ( $B = -2.66, t = -7.60, p < .001$ ), CH ( $B = -1.28, t = -3.74, p < .001$ ), CO ( $B = -.47, t = -1.74, p > .05$ ). The difference in the total hardiness score was significant ( $B = -4.40, t = -6.73, p < .001$ ).

<Table 2>

Table 2 shows the hierarchical regression analysis for testing the first part of H<sub>3</sub>. After entering sex, age, and field of study in step 1, the inclusion of the Big Five traits in step 2 explained 29% additional variance in hardiness – where the total model explained 45%. Except for A, all Big Five traits were significantly isolated predictors in the final model where ES was the strongest ( $\beta = .40, p < .001$ ). Figure 3 shows the probability estimates of the Big Five trait scores for belonging to the high hardiness group. The Odds Ratios and 95% confidence intervals were as follows: E 1.29 (1.02-1.63), A 1.08 (0.76-1.54), C 1.51 (1.08-2.10), ES 1.31 (1.03-1.66), and O 1.69 (1.24-2.30). All Odds Ratios were statistically significant except for A. Figure 3 shows that while some nuances were seen between police and psychology students regarding the Big Five traits' ability to predict the high hardiness group, similar trends were seen across both fields of study.

<Figure 3>

## Discussion

The present study investigated differences in Big Five personality traits and hardiness between police and psychology students, and, to what degree the personality traits could predict hardiness. Findings provided partial support for the first and second hypotheses. While police students relative to psychology students, as expected, scored significantly higher on E, C, and ES, and lower on O – they also scored higher than psychology students on A, which was unexpected. For hardiness, police students scored significantly higher than psychology students. There was, however, no significant group difference for the subcomponent of CO. Finally, findings predominantly supported the final hypothesis regarding the personality-relatedness of hardiness except for A, which did not predict hardiness.

The findings pertaining to police students' higher scores on A, and the lack of a significant difference in CO scores between the student groups, contrasted our expectations. Of course, high scorers on A may be functional among police personnel. For example, agreeable individuals might deescalate interpersonal conflicts better than their antagonistic counterparts (Graziano & Tobin, 2017). However, another perspective regarding A is the findings demonstrating that agreeable individuals might experience subjective distress when encountering interpersonal conflicts (Suls et al., 1998), which point to a possible suboptimality of very high scores of this trait for police work. Police students reported higher hardiness than psychology students. However, the two student groups did not differ with respect to the component of CO. Police students were not, therefore, unique or distinctive in their belief that a course of events can be influenced (CO), although they were more certain relative to psychology students that they could involve themselves in an interesting and meaningful world (CM) and that new experiences can represent exciting opportunities (CH).

The correlations observed between the Big Five traits and hardiness were somewhat higher than those reported by Merino-Tejedor et al. (2015) and Bartone et al. (2009).

Particular contrasts were seen with regard to E and ES, where our findings witnessed quite high correlations toward the total hardiness core (.40 and .58). It could be that the BFI-20 operationalizes E and ES somewhat differently compared to the personality measures used in the abovementioned studies. Besides these apparent associations between the Big Five traits and hardiness, the results concerning hypothesis three witnessed two main findings. On the one hand, using hierarchical regression treating hardiness as a continuous variable, ES was the strongest unique predictor. On the other hand, when predicting those categorized as clearly hardy individuals (i.e., the high hardiness group), O was the strongest personality predictor. The first finding was in accordance with the meta-analysis by Oshio et al. (2018) and the findings of Bartone et al. (2009), where N emerged as the trait with the highest correlation toward respectively resilience and hardiness. The interpretation of the second finding, when dichotomizing hardiness, warrants some caution due to the small sample sizes in the low and high hardiness groups (38 and 31, respectively).

Nonetheless, we note that the finding of O as the strongest predictor of the high hardiness group corresponds to another study dichotomizing hardiness (Ramanaiah et al., 1999). It may not be counter-intuitive that individuals high in flexibility, imaginativeness, and originality are more likely to be hardy individuals relative to their more conservative counterparts. After all, open individuals prefer novel activities and experiences of new places instead of familiarity and routine (Sutin, 2017) – which naturally relates to hardiness, especially the CH component.

Study limitations should be noted. Firstly, the sample sizes obtained in the present study call for concern. Considering the rather low response rates (31% and 36%) our findings must be interpreted with caution regarding generalizability to the police and psychology student bodies. Unfortunately, we had no possibility of checking for sampling bias, neither for the police nor the psychology student participants. However, through personal communication

with the administrative departments at the two colleges, the authors note that the sex ratio and the age range in our samples corresponded well with the student body characteristics.

Secondly, there is a possibility that existing sex differences in traits may account for some of the differences seen between police and psychology students due to predominant female participation in the latter sample. In this regard, it is relevant to inspect the results from a recent Big Five study in Norway (Nordmo et al., 2021), in which mean trait scores across the sexes were reported among a complete age cohort. The most notable sex difference was seen with regard to ES, where females scored lower than males. For the other four Big Five traits, the mean scores aligned. As such, our finding of police students scoring higher on ES than psychology students warrant some caution – even though we controlled for sex in the hierarchical regression. Thirdly, the BFI-20 and the DRS-15-R are not optimal for nuanced personality or resilience descriptions on an individual level due to their limited length. However, they are feasible and can be useful for quantitative research purposes. Ideally, larger Cronbach's alpha values for A (.53), C (.65), CH (.61), and CM (.63) should have been obtained in our sample. Thus, acknowledging some psychometric challenges with these short measures is warranted – even though they have been validated with sound results in other Norwegian studies (Engvik & Clausen, 2011; Hystad et al., 2010).

In conclusion, the present study provides some support for a Norwegian ‘police personality’ where the main unexpected finding was that the average police student was more agreeable than the average psychology student. Our findings otherwise point to characteristics that may be useful in police work – such as high scores on ES and psychological hardiness. We have also provided nuanced findings of the personality-relatedness of the hardiness construct. Whereas ES was the strongest predictor toward hardiness among the Big Five traits in a traditional regression analysis, O was the strongest predictor for identifying those who were very high scorers on hardiness. In future research for a possible police distinctiveness in



Big Five personality and hardiness, police students may be compared to samples with presumably a closer resemblance to law enforcement relative to psychology students (e.g., students attending military education programs). Lastly, it would be theoretically interesting to explore if the relationship between O and the hardiness construct replicates with other, and preferably larger, samples. We recommend, therefore, to also dichotomize hardiness when investigating its personality-relatedness, as this can supplement standard linear analyses for reaching a nuanced understanding of this construct.

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Table 1

*Descriptive Statistics and Intercorrelations for Study Variables (n = 295-302)*

Variables	<i>M (SD)</i>	Range	1	2	3	4	5	6	7	8	9	10	11
1.Sex	-	-	-										
2.Age	25.08 (7.24)	18-54	0.07	-									
3.Field of study	-	-	0.40**	0.31**	-								
<i>Personality traits</i>													
4.Extraversio n	20.14 (4.78)	5-28	0.07	-0.11*	-0.25**	-							
5.Agreeablen ess	23.55 (2.98)	10-28	0.01	0.04	-0.25**	0.18**	-						
6.Conscientio usness	20.87 (3.71)	9-28	-0.02	0.04	-0.34**	0.16**	0.37**	-					
7.Emotional S.	18.41 (5.12)	4-28	-0.29**	0.05	-0.51**	0.37**	0.30**	0.36**	-				
8.Openness	18.28 (4.73)	5-28	0.05	0.10	0.14*	-0.03	-0.02	-0.23**	-0.01	-			

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*Hardiness*

9.CM	15.92 (2.80)	5-20	-0.08	0.08	-0.35**	0.40**	0.38**	0.38**	0.49**	0.08	-		
10.CH	13.39 (2.57)	6-19	-0.07	0.05	-0.21**	0.24**	0.15*	0.02	0.43**	0.24**	0.17**	-	
11.CO	17.55 (1.99)	9-20	-0.02	0.07	-0.08	0.15*	0.13*	0.15*	0.25**	0.08	0.28**	0.22**	-
12.Hardiness	46.88 (5.14)	27-58	-0.09	0.10	-0.33**	0.40**	0.34**	0.28**	0.58**	0.20**	0.74**	0.68**	0.65**

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*Note.* Sex coded 0=male and 1=female; Field of study coded 0=Police studies and 1=Psychology studies; CM=Commitment; CH=Challenge; CO=Control.

\*\*  $p < 0.01$ , \*  $p < 0.05$  (two-tailed).

Table 2

*Summary of Hierarchical Regression Analysis for BFI-20 Domain Scores Predicting Hardiness, Controlling for Sex, Age and Field of Study*

Predictor	Step 1 $\beta$	Step2 $\beta$
Sex	.06	.03
Age	.23***	.09
Field of study	-.42***	-.11
Extraversion		.19***
Agreeableness		.14**
Conscientiousness		.05
Emotional Stability		.40***
Openness		.22***
$R^2$	.15***	.45***
$R^2$ change	-	.29***
$F$	17.24***	27.30***

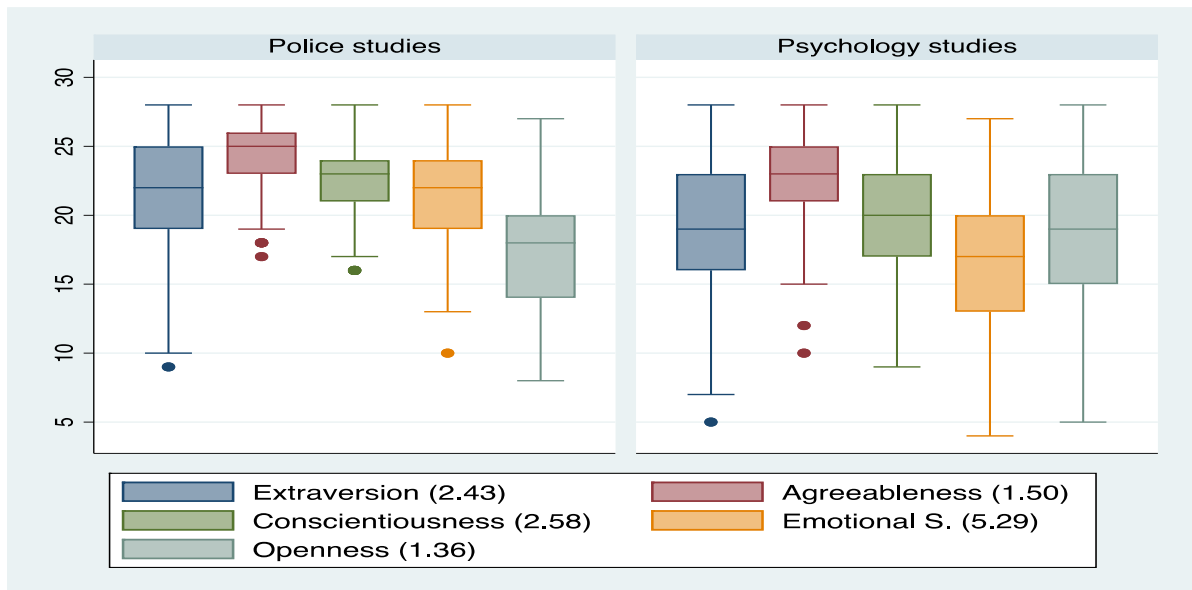
*Note.*  $\beta$ =Standardized coefficient; Sex coded 0=male and 1=female; Field of study coded 0=Police studies and 1=Psychology studies.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$  (two-tailed).



Figure 1

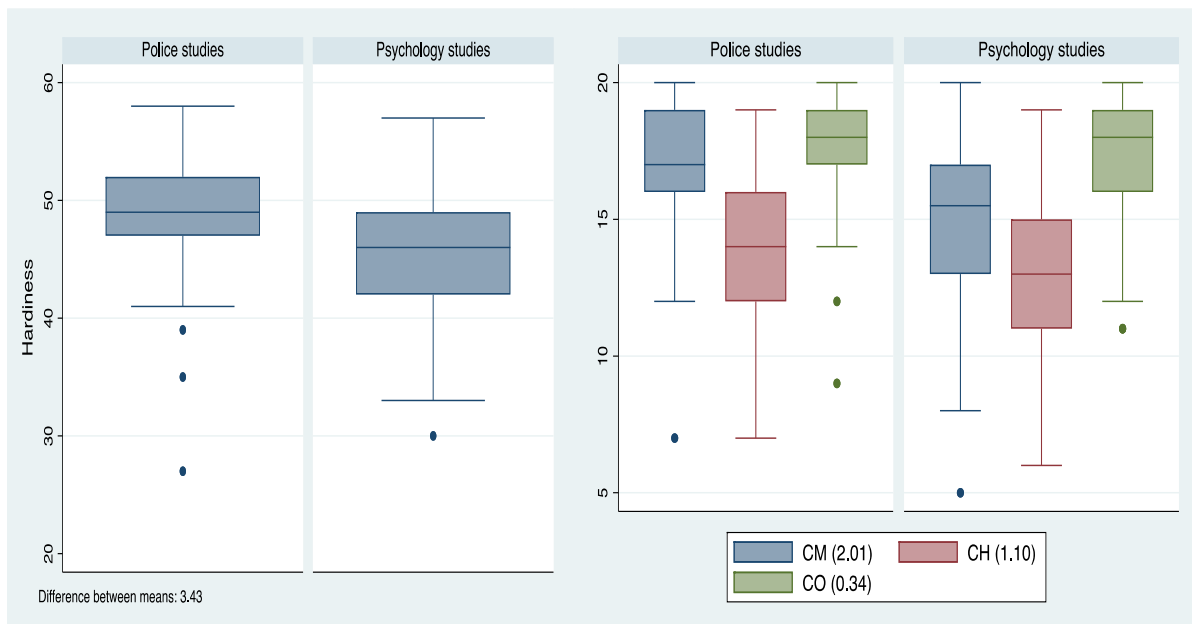
Box Plots of BFI-20 Domain Scores by Field of Study



Note. Differences between means in brackets.

Figure 2

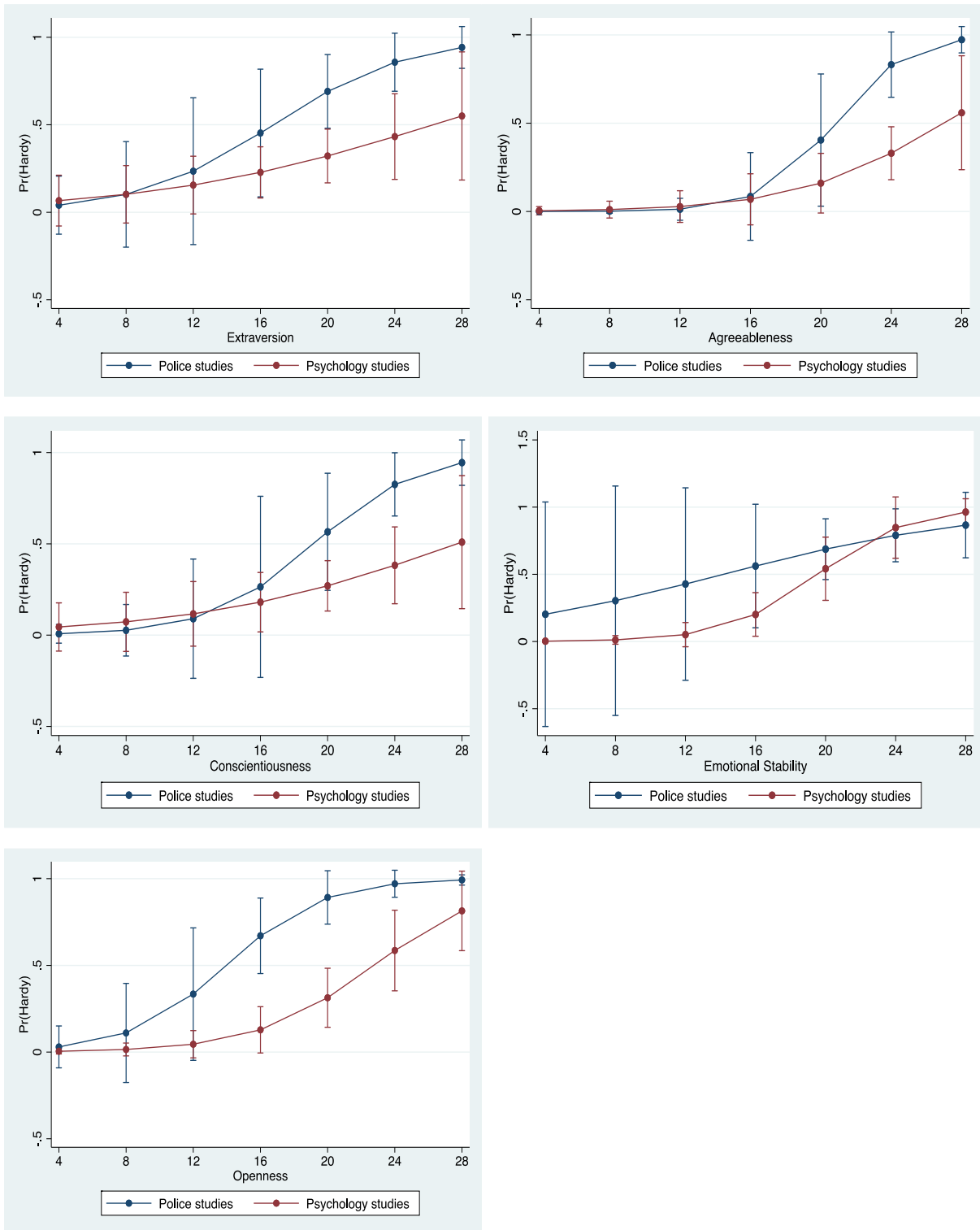
Box Plots of DRS-15-R Total Hardiness and Components Scores by Field of Study



Note. Differences between means in brackets; CM=Commitment; CH=Challenge; CO=Control.

Figure 3

*Effect of Big Five Traits and Field of Study for Predicting a High Hardiness group.*



*Note.* Predictions with 95% CIs