

RESEARCH ARTICLE

Gender-Specific Associations Between Kinesiology Undergraduate Students' Trait Personality Facets and their Motivation in School Physical Education

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Received: 07 April 2026 Accepted: 27 April 2026 Published: 07 May 2026

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Abstract

Despite these recent knowledge advances about trait personality in a variety of settings such as physical activity and sport, little research has investigated the association between personality traits – especially the facets or subscales housed within the six main HEXACO dimensions of personality – and positive motivational outcomes in school-based PE. The aim of this study was to investigate gender differences in the facets of personality and how the facets related to and/or predicted enjoyment, autonomy-support, self-efficacy, positive affect, and task and ego goal orientation through 300 university students' survey recollections of their experiences in high school physical education. Results revealed a main effect difference in the personality facets by gender ($p < .001$) with women higher in fairness, greed-avoidance, modesty, fearfulness, anxiety, dependence, sentimentality, sociability, organization, and perfectionism whereas men were higher in inquisitiveness and social boldness. Facet predictors of motivational outcomes were social self esteem (four overall and four in women), fairness and aesthetic appreciation (two each, overall), greed avoidance (two in women), diligence (three in men), and sincerity, forgiveness, and gentleness (two each in men). Overall and by gender, students in physical education may be more motivationally at risk if they have non-availing levels of these personality facets.

Keywords: Autonomy Support, Enjoyment, Goal Orientation, Positive Affect, Self-Efficacy.

1. Introduction

Personality tends to be assessed according to one's traits – described as “consistent preferences or patterns of behavior” (Chamorro-Premuzic & Furnham, 2005, p. 7) – are clustered within six relatively independent personality dimensions commonly referred to as (H) honesty-humility, (E) emotionality (or neuroticism), (X) extraversion, (A) agreeableness, (C) conscientiousness, and (O) openness to experience (Ashton & Lee, (2007). Ashton (2013) describes each more specifically as: “(H) sincere, honest, loyal, modest, unassuming, and ethical; (E) emotional, over-sensitive, anxious, and clingy; (X) outgoing, lively, sociable, cheerful, and confident; (A) patient, tolerant,

peaceful, mild, and forgiving; (C) organized, self-disciplined, hard-working, efficient, and precise; and, (O) intellectual, creative, unconventional, innovative, and inquisitive” (p. 71). The opposite traits would be reflected in lower levels of these dimensions.

There is extensive research on trait personality in many global settings with associations reported between the HEXACO personality dimensions and outcomes such as academic and vocational achievement, indices of health, criminality, and peer and marital relationships (Ashton, 2013). Other research in sport and physical activity settings has, for example, reported that sport participation tends to be consistently predicted by conscientiousness and low emotionality (Allen et al.,

Citation: Ken Lodewyk. Gender-Specific Associations Between Kinesiology Undergraduate Students' Trait Personality Facets and their Motivation in School Physical Education. *Journal of Sports and Games*. 2026; 8(1): 12-21.

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2013); whereas physical activity is most frequently linked to extraversion followed by conscientiousness and low emotionality (Wilson & Dishman, 2015). More specific results point to extraversion as the most positively linked personality dimension with participation in moderate-intensity physical activity, while conscientiousness is more strongly associated with vigorous physical activity (De Bruijn et al., 2009).

Despite these recent knowledge advances about trait personality in a variety of settings such as physical activity and sport, very little research has investigated the potential role of personality traits in physical education (PE) students especially their association with positive motivational outcomes in school-based PE. Six availing motivational outcomes reported in PE research (e.g., Chen, 2001; Haerens et al., 2017; Lodewyk & Pybus, 2012) are enjoyment (a general sense of pleasure for something), autonomy support (AS; one's sense of being supported, guided, and given choices and independence by significant others like teachers), self-efficacy (SE; one's belief in their ability to succeed), positive affect (PA; a generally upbeat mood state), ego goal orientation (EGO; applying effort more for external purposes like to avoid failure, attain rewards, or feel superior to others), and task goal orientation (TGO; applying effort due to more internal purposes such as learning, improvement, or mastering something. There is significantly more evidence about the role of personality traits and these outcomes in non-PE domains than in PE. For example, Lochbaum et al. (2013) found links between emotionality and EGO relative to leisurely exercise whereas extraversion was associated more strongly to TGO relative to both leisurely and intense exercise.

Even less is known about how motivational constructs relate to trait personality in PE as a function of gender. This is problematic because research has noted quite consistent gender differences in the personality dimensions and in several motivational outcomes both in PE and PE-related fields such as sport and physical activity. To illustrate, not only are adolescent girls generally at more risk of being less physically active and fit overall than adolescent boys (Dishman et al., 2005), in PE they tend to have lower levels of enjoyment (Barr-Anderson et al., 2007), SE (Flintoff & Scratton, 2006), PA (Dishman et al., 2005; Yli-Piipari et al., 2009), and drop-out rates when PE becomes optional in high school (Lodewyk & Pybus, 2012). Relative to personality dimensions, researchers (e.g., Ashton, 2013; Ackerman, 2013; Allen et al., 2013; Lee & Ashton, 2004) have reported that females

are generally higher than males in honesty-humility (during undergraduate university), extraversion (in many sports settings), emotionality (overall, in academics, and in many sports), agreeableness (overall and in many sports), and in conscientiousness (in many academic and sport contexts).

The few studies that have investigated trait personality in PE by gender have revealed some noteworthy links with indices of motivation in high school PE. For example, Lodewyk (2019a) revealed that personality collectively predicted enjoyment, AS, TGO, EGO, PA, and SE in females and each of these except for enjoyment and AS in males. Unfortunately, the few studies of trait personality in PE have focused on the six broad dimensions (HEXACO) rather than more specifically into the facets or sub-scales housed within these personality dimensions. For example, in the HEXACO trait personality model each facet consists of four items and there are four facets within each of the six dimensions (24 total facets; Ashton, 2013). In one of the only studies of personality facets in school physical education, Lodewyk (2018) reported an excellent model fit from the HEXACO personality dimensions to negative affect indirectly through victimization. Specific facet predictors of negative affect in PE were anxiety and organization along with lower social self-esteem and prudence. Victimization in PE was predicted by lower fairness, lower fearfulness, and lower social self-esteem. Researchers (e.g., Lodewyk, 2019a, 2019b, 2018; Rhodes & Smith, 2006; Wilson & Dishman, 2015) have called for more gender-based research examining the trait personality facets because there is evidence that in certain settings "higher order personality traits like extraversion, conscientiousness and neuroticism moderate physical activity and that 'some lower order traits may be better predictors of physical activity than higher order traits and may moderate motivation'" (Rhodes & Pfaeffli, 2012, p. 195). For example, Wilson and Dishman (2015) report that existing personality facet research in non-PE settings has reported that the activity facet of emotionality is a consistent correlate of physical activity often even surpassing the dimension that houses it. They add that the sensation-seeking (desirous of excitement and exploration) facet of extraversion is another consistent predictor of physical activity.

Heeding such calls for more research, this study is a more fine-grained analysis of personality through its analysis of facets rather than dimensions. The two specific objectives for this study were to investigate

gender differences in personality facets and whether the personality facets related to and/or predicted the six motivational outcomes in PE (enjoyment, AS, SE, EGO, TGO, and PA).

2. Method

2.1 Participants

A 20-minute survey (95% participation level) was administered by the lead researcher to 315 consenting university students during a second or third-year Kinesiology course at a large ($n = 18,000$ students) public university in south-central Canada. After eliminating 15 cases for being in a major other than Kinesiology and another 15 for being outliers (Tabachnick & Fidell, 2006), the final sample consisted of 300 students ($M_{age} = 20.65$) of which 147 (48.8%) reported being men and 153 (51.2%) women.

2.2 Measures

The survey had three sections that began with a few initial demographic questions (e.g., gender, age, major) and were followed by 100 items measuring personality traits and finally 40 items assessing the six availing motivational outcomes (enjoyment, AS, SE, EGO, TGO, and PA) based on students' recall of previous school-based PE experiences. Each measure and scale in the survey had been previously validated (e.g., Lodewyk & Gao, 2020; Lodewyk & Pybus, 2012) with satisfactory ($>.70$) alpha reliability coefficients and used a 5-point Likert-type scale (1 = strongly disagree, 3 = neutral, 5 = strongly agree) so a higher value reflected a higher level of a personality facet or a motivational outcome.

The 100-item HEXACO Personality Inventory (Ashton & Lee, 2007) was used to assess the 24 personality facets (each of the six HEXACO dimensions housed four facets) with each facet assessed by four items. Since the 4-item altruism sub-scale is considered an "extra" (not part of any of the HEXACO dimensions) it was not included in this study. Established scale-specific measures were used to assess the six motivational constructs, namely: the seven-item *Shortened Physical Activity Enjoyment Scale* (S-PACES; Motl et al., 2001), the six-item *Perceived Autonomy Support in PE* sub-scale by Ntoumanis (2005), the four-item self-efficacy for performance scale from the *Motivated Strategies for*

Learning Questionnaire (Pintrich et al., 1991), six ego-goal orientation and seven task-goal orientation items from the 13-item *Task and Ego Orientation in Sport Questionnaire* (Duda, 1989), and the 10-item positive affect scale (e.g., happy, safe, accepted, and confident) from the *Positive and Negative Affect Schedule* (Watson et al., 1988). Sample items for each of the six motivational constructs were: "PE is no fun at all" (negatively valenced item for enjoyment); "I feel that my physical education teachers provide me choices and options" (autonomy support); "I expected to do well in school PE" (self efficacy); "I feel really successful in physical education class when I can do better than my friends" (ego goal orientation); "I feel really successful in physical education class when I learn a new skill by trying hard" (task goal orientation); and, "In PE, I tend to feel accepted" (positive affect).

2.3 Data Analysis

The Statistical Package for the Social Sciences (SPSS) was used to perform all statistical analyses in this study. First, descriptive statistics and Pearson bivariate correlation coefficients were computed overall by gender. Second, separate multivariate analysis of variance (MANOVA) was used to assess differences in personality facets by gender. Third, linear regression procedures were performed with the personality facets simultaneously entered as predictors of each motivational construct were performed in the overall sample and separately for men and women. Finally, the frequency of each facet statistically predicting one or more of the motivational outcomes was computed.

3. Results

Descriptive statistics and alpha reliability coefficients for each construct in the full sample and by gender are provided in Table 1. Two personality facet or motivational outcome had an alpha reliability coefficient below the recommended level of .60 for scales with less than 10 items (Lowenthal, 1996). These were unconventionality ($\alpha = .36$) and sincerity ($\alpha = .58$). The former was dropped from the study while the latter was retained with caution on McRae's (2015) assertions that the inclusion of this item does not seriously compromise validity.

Table 1. Descriptive Statistics by Group

	All			Gender			
				Females		Males	
Scales	α	M	SD	M	SD	M	SD
HH Sincerity	.58	3.37	.67	3.36	.72	3.39	.61

HH Fairness	.73	3.43	.85	3.60***	.82	3.23	.84
HH Greed-Avoidance	.81	2.93	.88	3.11***	.86	2.74	.87
HH Modesty	.62	3.73	.62	3.87***	.55	3.57	.65
EM Fearfulness	.74	2.86	.79	3.22***	.76	2.48	.65
EM Anxiety	.73	3.55	.83	3.84***	.76	3.24	.78
EM Dependence	.78	3.00	.83	3.26***	.86	2.72	.71
EM Sentimentality	.72	3.45	.76	3.76***	.74	3.12	.64
EX Social Self Esteem	.62	3.84	.57	3.78	.56	3.91	.57
EX Social Boldness	.80	3.07	.83	2.98	.86	3.16*	.78
EX Sociability	.70	3.61	.69	3.70*	.63	3.51	.73
EX Liveliness	.75	3.68	.65	3.72	.62	3.64	.68
AG Forgiveness	.69	2.82	.67	2.76	.68	2.88	.65
AG Gentleness	.62	3.31	.60	3.34	.64	3.29	.56
AG Flexibility	.62	2.97	.70	2.97	.73	2.97	.66
AG Patience	.75	3.32	.74	3.31	.74	3.33	.74
CON Organization	.71	3.56	.81	3.68**	.81	3.44	.79
CON Diligence	.66	3.92	.56	3.98	.51	3.88	.61
CON Perfectionism	.63	3.44	.65	3.54**	.69	3.33	.60
CON Prudence	.68	3.27	.65	3.27	.67	3.26	.64
OE Aesthetic Appreciation	.61	2.64	.86	2.69	.89	2.59	.81
OE Inquisitiveness	.60	2.58	.78	2.37	.79	2.81*	.71
OE Creativity	.70	3.06	.83	3.06	.89	3.07	.77
Enjoyment	.89	4.51	.60	4.42	0.65	4.58	0.53
Autonomy Support (AS)	.86	3.64	.69	3.58	0.72	3.70	0.67
Self Efficacy (SE)	.86	4.50	.60	4.37	0.64	4.63	0.52
Ego Goal Orientation (EGO)	.85	3.45	.81	3.34	0.80	3.57	0.81
Task Goal Orientation (TGO)	.84	4.17	.49	4.19	0.47	4.16	0.51
Positive Affect (PA)	.86	4.12	.63	4.05	0.69	4.20	0.55

Note: *N* = 300. Females (*n* = 153), Males (*n* = 147); HH = Honesty-Humility; EM = Emotionality; EX = Extraversion; AG = Agreeableness; CON = Conscientiousness; OE = Openness to Experience; Significantly higher by gender: * *p* < .05; ** *p* < .01; *** *p* < .001.

MANOVA was used to determine differences in personality facets as a function of gender. Results revealed a main effect difference in the personality facets by gender, $F(23, 273) = 9.53, p < .001, \eta^2 = 0.445$. Follow-up ANOVA (1, 284) revealed that women were significantly higher than men in fairness, $F = 14.74, p < .001, \eta^2 = 0.048$; greed avoidance, $F = 13.73, p < .001, \eta^2 = 0.044$; modesty, $F = 19.72, p < .001, \eta^2 = 0.063$; fearfulness, $F = 81.91, p < .001, \eta^2 = 0.21$; anxiousness, $F = 44.06, p < .001, \eta^2 = 0.130$; dependence, $F = 35.07, p < .001, \eta^2 = 0.106$; sentimentality, $F = 62.67, p < .001, \eta^2 = 0.175$; sociability, $F = 5.89, p = .016, \eta^2 = 0.20$; organization, $F = 6.77, p = .010, \eta^2 = 0.022$; and perfectionism, $F = 8.06, p = .005, \eta^2 = 0.027$. Men were significantly higher than women in inquisitiveness, $F = 26.27, p < .001, \eta^2 = 0.082$; and in social boldness, $F = 3.89, p = .049, \eta^2 = 0.013$.

Separate regression analyses that simultaneously entered the 23 personality facets as predictors of each motivational construct (enjoyment, autonomy support, self efficacy, ego goal orientation, task goal orientation, and positive affect) were performed in the overall sample (Table 2) and in only males and females (Table 3). The results revealed that the personality facets collectively predicted enjoyment in the overall sample [$R^2 = .16, F(23, 263) = 2.24; p = .001$], in men [$R^2 = .25, F(23, 118) = 1.66; p = .042$], and in women [$R^2 = .29, F(23, 124) = 2.23; p = .003$]. Facet predictors of enjoyment in the overall sample were social self esteem ($p = .002$), lower perfectionism ($p = .036$), and lower aesthetic appreciation ($p = 0.36$). In men, PE enjoyment was predicted by sincerity ($p = .005$), fairness ($p = .028$), lower forgiveness ($p = .022$), and lower perfectionism ($p = .048$). The sole predictor of PE enjoyment in women was social self esteem ($p < .001$).

Table 2. Personality Facet Predictors of Outcomes

Facet	Enjoyment		Autonomy Support		Self Efficacy		Ego GO		Task GO		Positive Affect	
	β	<i>T</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>
HH Si	.087	1.34	.001	0.01	.09	1.41	-.101	-1.59	.043	0.69	.067	1.05
HH Fa	.052	0.73	.053	0.73	-.008	-0.11	-.143	-2.03*	.077	1.11	.143	2.03*
HH GA	.027	0.39	-.014	-0.20	-.076	-1.12	-.157	-2.35*	.107	1.64	-.061	-0.92
HH Mo	-.022	-0.32	-.012	-0.18	.006	0.09	-.021	-0.31	-.097	-1.46	-.049	-0.72
EM Fe	-.067	-0.91	-.080	-1.08	-.074	-1.01	-.085	-1.18	-.037	-0.52	-.025	-0.34
EM Anx	.032	0.43	.060	0.78	-.044	-0.57	-.115	-1.55	-.012	-0.16	.061	0.82
EM De	.043	0.57	.094	1.23	.022	0.28	.062	0.83	-.042	-0.58	.095	1.27
EM Se	-.022	-0.30	.004	0.05	.116	1.58	.137	1.84	.223	3.16**	-.029	-0.40
EX SSE	.225	3.19**	.253	3.57***	.218	3.09**	-.066	-0.95	.023	0.34	.156	2.24*
EX SB	-.028	-0.36	.026	0.34	.077	1.00	.049	0.65	-.058	-0.78	.137	1.81
EX So	-.055	-0.75	.004	0.06	-.144	-1.95	-.043	-0.59	.112	1.57	-.063	-0.87
EX Li	.075	1.02	-.098	-1.33	.041	0.56	-.071	-0.98	.125	1.76	.143	1.97*
AG Fo	-.075	-1.13	.008	0.12	.041	0.61	-.096	-1.47	-.074	-1.16	-.023	-0.36
AG Ge	.052	0.75	.058	0.82	-.02	-0.30	-.028	-0.39	.056	0.83	.069	1.00
AG Fl	.051	0.74	.065	0.93	-.046	-0.67	-.071	-1.05	.015	0.23	.041	0.60
AG Pa	-.057	-0.82	-.027	-0.40	-.025	-0.36	.059	0.87	-.103	-1.56	-.047	-0.69
CON O	-.014	-0.20	-.011	-0.17	.000	0.00	-.038	-0.57	.072	1.10	-.053	-0.78
CON Di	.122	1.73	.103	1.44	.074	1.05	.127	1.82	.174	2.56**	.103	1.48
CON Pe	-.153	-2.10*	-.081	-1.11	-.073	-1.00	-.053	-0.73	.028	0.40	-.070	-0.97
CON Pr	.046	0.66	.009	0.13	.016	0.23	-.022	-0.32	.044	0.66	.076	1.10
OE AA	-.157	-2.11*	-.075	-1.00	-.172	-2.32*	-.089	-1.22	.000	0.03	-.056	-0.77
OE Inq	-.044	-0.62	-.140	-1.98*	-.073	-1.04	-.051	-0.77	-.008	-0.12	-.101	-1.46
OE Cr	-.003	-0.04	-.068	-1.01	.097	1.46	.110	1.68	.080	1.24	-.050	-0.77

Note: *N* = 300. β values = standardized regression coefficients. *H-H* = Honesty-Humility; *EM* = Emotionality; *EX* = Extraversion; *AG* = Agreeableness; *CON* = Conscientiousness; *OE* = Openness to Experience; *GO* = Goal Orientation; *Si* = Sincerity; *Fa*=Fairness; *GA*=Greed-Avoidance; *Mo*=Modesty; *Fe*=Fearfulness; *An*=Anxiety; *De*=Dependence; *Se*=Sentimentality; *SSE*=Social Self Esteem; *SB*=Social Boldness; *So*=Sociability; *Li*=Liveliness; *Fo*=Forgiveness; *Ge*=Gentleness; *Fl*=Flexibility; *Pa*=Patience; *O*=Organization; *Di*=Diligence; *Pe*=Perfectionism; *Pr*=Prudence; *AA*=Aesthetic Appreciation; *In*=Inquisitiveness; *Cr*=Creativity; * *p* < .05; ** *p* < .01; *** *p* < .001.

Table 3. Personality Facets Predictors of Outcomes by Gender

Facet	Males						Females					
	ENJ	AS	SE	EGO	TGO	PA	ENJ	AS	SE	EGO	TGO	PA
	<i>t</i>	<i>T</i>	<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>	<i>t</i>
HH Si	2.83**	1.64	2.54**	-0.28	0.38	1.18	-0.18	-1.03	-0.32	-1.69	0.16	0.44
HH Fa	2.22*	1.25	1.49	-0.42	0.70	1.56	-0.43	0.36	-0.56	-1.24	0.93	1.09
HH GA	-0.04	0.18	-0.89	-0.93	0.19	-0.30	1.17	0.16	0.64	-2.36*	2.30*	0.08
HH Mo	-1.86	-1.68	-1.36	-0.84	-1.86	-1.50	1.74	1.34	1.23	1.01	0.82	0.84
EM Fe	-1.50	-0.87	-0.47	-1.04	0.52	-0.07	1.02	0.20	0.36	-0.01	-0.05	0.90
EM Anx	0.46	0.01	-1.36	-1.13	-0.60	-0.24	0.30	0.86	0.53	-1.77	-0.20	1.46
EM De	0.36	1.17	-0.14	-0.62	0.42	1.50	0.33	0.62	0.67	1.67	-1.10	0.07
EM Se	1.71	0.77	1.96*	1.71	1.83	0.24	-1.73	-0.54	0.62	1.07	2.84**	-0.61
EX SSE	0.58	1.05	0.33	-1.37	-1.30	-0.13	3.53***	3.16**	2.87**	-0.77	1.56	3.12**
EX SB	0.46	-0.19	0.05	-0.09	-0.55	0.71	-1.45	0.12	0.60	-0.13	-0.98	0.95
EX So	-1.07	0.73	-0.73	1.10	1.62	-0.26	1.33	0.41	-0.82	-1.48	1.28	0.40
EX Li	0.73	-1.25	0.18	-1.81	1.86	1.51	.82	-0.22	1.01	0.73	0.47	1.47
AG Fo	-2.33*	-0.22	-1.13	-2.50**	-1.52	-0.11	-0.83	0.15	0.29	0.59	-1.07	-0.90
AG Ge	1.25	1.61	0.39	0.42	2.04*	2.10*	-0.02	-0.17	-0.47	-1.45	-0.75	-0.02
AG Fl	-0.30	0.26	-0.92	-1.90	-1.26	-0.40	1.12	0.95	-0.36	0.09	1.14	0.94
AG Pa	0.56	0.69	0.77	0.99	0.16	0.26	-1.24	-0.88	-0.34	0.60	-1.41	-0.76

CON O	-0.01	-1.38	-0.64	-1.20	1.78	-0.24	0.89	1.16	.93	1.37	0.09	-0.27
CON Di	1.43	1.60	2.23*	2.00*	2.19*	1.29	1.47	0.85	0.05	1.75	1.27	0.76
CON Pe	-2.00*	-1.75	-1.06	-0.69	0.25	-0.66	-1.84	-0.33	-0.73	-1.31	.25	-0.63
CON Pr	0.57	0.86	0.04	-1.00	-1.31	0.82	-0.31	-1.32	-0.91	-0.11	1.39	-0.10
OE AA	-0.86	-0.57	-1.48	-0.58	0.89	-0.25	-1.63	-0.91	-1.47	-0.89	-.63	-0.91
OE Inq	-0.89	-1.24	-1.81	-0.08	-0.19	-0.05	-0.52	-1.89	-0.85	-1.52	-.82	-2.24
OE Cr	0.89	-0.58	1.19	0.30	0.94	-0.87	0.34	-0.36	1.25	3.38***	1.66	0.44

Notes: Females ($n = 153$), Males ($n = 147$); HH = Honesty-Humility; EM = Emotionality; EX = Extraversion; AG = Agreeableness; CON = Conscientiousness; OE = Openness to Experience; ENJ=Enjoyment; AS = Autonomy Support; EGO = Ego Goal Orientation; TGO=Task Goal Orientation; SE=Self Efficacy; PA=Positive Affect; B=Bullying; Si = Sincerity; Fa=Fairness; GA=Greed-Avoidance; Mo=Modesty; Fe=Fearfulness; An=Anxiety; De=Dependence; Se=Sentimentality; SSE=Social Self Esteem; SB=Social Boldness; So=Sociability; Li=Liveliness; Fo=Forgiveness; Ge=Gentleness; Fl=Flexibility; Pa=Patience; O=Organization; Di=Diligence; Pe=Perfectionism; Pr=Prudence; AA=Aesthetic Appreciation; In=Inquisitiveness; Cr=Creativity; * $p < .05$; ** $p < .01$; *** $p < .001$.

The personality facets collectively predicted autonomy support in the overall sample [$R^2 = .15$, $F(23, 263) = 2.03$; $p = .004$] and in women [$R^2 = .25$, $F(23, 124) = 1.79$; $p = .023$] although not in men [$R^2 = .20$, $F(23, 118) = 1.23$; $p = .235$]. Facet predictors of autonomy support in the overall sample were social self-esteem ($p < .001$) and lower inquisitiveness ($p = .049$). Autonomy support in PE among women was predicted by social self esteem ($p = .002$) whereas no facets predicted autonomy support in men.

Self efficacy in PE was significantly predicted by the personality facets in the overall sample [$R^2 = .16$, $F(23, 263) = 3.21$; $p = .002$] and in men [$R^2 = .27$, $F(23, 118) = 1.80$; $p = .022$] although not in women [$R^2 = .20$, $F(23, 124) = 1.38$; $p = .132$]. Facet predictors of self efficacy were social self-esteem ($p = .002$) and lower aesthetic appreciation ($p = .021$) in the overall sample, sincerity ($p = .012$), sentimentality ($p = .05$), and diligence ($p = .028$) in men, and social self-esteem ($p = .005$) in women.

The personality facets also collectively predicted ego goal orientation in the overall sample [$R^2 = .19$, $F(23, 263) = 2.59$; $p < .001$] and in women [$R^2 = .34$, $F(23, 124) = 2.63$; $p < .001$] although not in men [$R^2 = .23$, $F(23, 118) = 1.39$; $p = .128$]. Facet predictors of ego goal orientation were lower fairness ($p = .044$) and lower greed avoidance ($p = .020$) in the overall sample, diligence ($p = .048$) and lower forgiveness ($p = .014$) in men, and creativity ($p = .001$) and lower greed avoidance ($p = .020$) in women.

Task goal orientation was predicted by the personality facets in the overall sample [$R^2 = .23$, $F(23, 263) = 3.32$; $p < .001$], in men [$R^2 = .32$, $F(23, 118) = 2.35$; $p = .002$], and in women [$R^2 = .32$, $F(23, 124) = 2.50$; $p < .001$]. Facet predictors of task goal orientation were sentimentality ($p = .002$) and diligence ($p = .011$) in the overall sample, gentleness ($p = .043$) and diligence

($p = .031$) in men, and greed avoidance ($p = .023$) and sentimentality ($p = .005$) in women.

The personality facets also predicted positive affect overall [$R^2 = .19$, $F(23, 263) = 2.68$; $p < .001$] and in women [$R^2 = .33$, $F(23, 124) = 2.63$; $p < .001$] although not in men [$R^2 = .21$, $F(23, 118) = 1.28$; $p = .195$]. Facet predictors of positive affect were fairness ($p = .044$), social self-esteem ($p = .026$), and liveliness ($p = .050$) in the overall sample, gentleness ($p = .038$) in men, and social self-esteem ($p = .002$) in women.

Finally, an analysis of the frequencies of outcome predictions by facets revealed that 10 of the 23 facets did not predict any of the outcomes. These were HH-modesty, EM-fearfulness, EM-anxiety, EM-dependence, EX-social boldness, EX-sociability, AG-flexibility, AG-patience, CON-organization, and CON-prudence. It is also noteworthy that none of the EX or OE facets predicted outcomes in men and none of the AG and CON facets did so in women. The other 13 facets each predicted at least one motivational outcome overall, 11 in men, and eight in women. In the overall sample, social self esteem predicted the most outcome variables (four) followed by fairness and aesthetic appreciation (two each). In women, social self esteem also predicted four outcomes followed by greed avoidance with two. In males, diligence emerged as the most frequent outcome predictor with three followed by sincerity, forgiveness, and gentleness with two each.

4. Discussion

This study added specific insight into gender differences in personality facets in PE and whether personality facets related to and/or predicted six established motivational outcomes (enjoyment, AS, SE, EGO, TGO, and PA) in PE. The results of this study revealed, first, that women were higher than men

in three of the honesty-humility facets (fairness, greed avoidance, and modesty), all four of the emotionality facets (fearfulness, anxiousness, dependence, and sentimentality), two conscientious facets (organization and perfectionism), and one extraversion facet (sociability). These findings partially align with research indicating that women are generally higher than men in levels of emotionality, extraversion, agreeableness, conscientiousness (Ashton, 2013), and honesty-humility (Lee & Ashton, 2004); and that females tend to be higher in emotionality in both physical activity and sport settings and higher in conscientious in sport settings (Allen et al., 2013). The results of the current study did not support research generally showing that women are more extraverted and agreeable in sport setting (Allen et al., 2013). This study also had rather novel findings that men were significantly higher than women in the inquisitiveness facets of openness to experience, in the social boldness facet of extraversion, and in social boldness (comfort and confident in social situations like leading, speaking in public, and approaching strangers) whereas women were higher in sociability (enjoyment of conversing, visiting, and partying with other rather than being alone).

Second, the results of this study provide evidence that an analysis of personality *facets* can add valuable information beyond the investigation of *dimensions* when assessing relations between personality traits and motivational outcomes in PE. For example, Lodewyk's (2019a) analysis of each personality dimension revealed that extraversion predicted each motivational outcome in both males and females (except for EGO in females and AS, and EGO in males); openness to experience predicted lower AS and SE in males, and lower enjoyment, AS, and PA in females; and honesty-humility predicted lower EGO in both males and females, and TGO only in females. In males, emotionality and conscientiousness predicted TGO whereas honesty-humility and agreeableness predicted lower EGO. Finally, in females, agreeableness, emotionality, and conscientiousness did not predict any motivational constructs. In contrast, of the 23 personality facets in the present study, 13 predicted at least one motivational outcome in the overall sample in this study (eleven in men and eight in women). In the whole sample, social self esteem (in extraversion) predicted the most motivational outcomes (four) followed by fairness (in honesty-humility) and aesthetic appreciation (in openness to experience) with two each. Hence, in the overall sample, social self-esteem, fairness, and lower

aesthetic appreciation were associated with the most motivational outcomes; however, this pattern varied notably by gender. In women, social self esteem predicted four outcomes (none in men), followed by greed avoidance with two (none in men). In men, diligence emerged as the most frequent outcome predictor with three (none in women) followed by sincerity, forgiveness and gentleness with two each (none in women).

Third, aspects of these findings reinforce previous associations between personality traits and availing outcomes in PE or PE-related settings. Discovering that social self esteem – that is, generally regarding oneself favorably (with likeable qualities) in social settings – was a predictor of four motivational outcomes in the overall sample of the current study, reinforces other findings that extraverted students may tend to be more motivated in a social setting like PE where qualities such as assertiveness, a positive identity, verbal and physical expression, skill and confidence in interpersonal communication (especially in more group-oriented settings) and being energetic and enthusiastic are useful and rewarded (Lodewyk, 2019a). In that way, PE might resemble other physical activity and sport settings because research in physical activity (Wilson & Dishman, 2015) and team sport settings (Allen et al., 2013; Jackson et al., 2011) has also reported extraversion as the most consistent personality dimension predictor of motivation and participation. The current study, however, also differentiates social self-esteem as a statistical predictor of motivational outcomes in the overall sample and in women although not in men. This finding could be due in part to the elevated importance females place on emotional intimacy and experiencing enjoyment through social engagement with trustworthy friends in PE (Flintoff & Scratton, 2006) and in PE-related areas like physical activity and sport (Parker & Asher, 1993). Research with males in PE has corroborated the current study's finding that social self esteem predicted enjoyment (Lodewyk & Gao, 2020) and self-efficacy (Lodewyk, 2018) while adding that it also predicted fitness, grade, lower victimization (Lodewyk, 2019b), intention to exercise, and lower anxiety (Lodewyk, 2018). In contrast, in studies of female high school PE students, social self esteem predicted enjoyment and lower anxiety (Lodewyk, 2018) along with grade and lower body size dissatisfaction (Lodewyk, 2019b).

Although not emerging separately in men or women in this study, enjoyment and self efficacy in PE were

predicted by significantly lower aesthetic appreciation (a facet of the openness to experience dimension). In other words, students with greater appreciation for beauty evident in a variety of art forms and natural wonders were prone to having less enjoyment and self-efficacy in PE. Other PE-based research on personality facets has revealed that aesthetic appreciation predicted lower effort in males (Lodewyk & Gao, 2020) and lower enjoyment in females (Lodewyk, 2019b). Meanwhile research on personality dimensions in PE (Lodewyk, 2019a) has revealed that those higher in openness to experience – that is, being more intellectual, creative, unconventional, innovative, and inquisitive – predict lower enjoyment, autonomy support, and positive affect in men and compromised autonomy support and self-efficacy in women. Komarraju and Karau (2005) suggest that teachers should differentiate instruction and content to enable students who are higher in openness to experience to use their creativity, critical thinking skills, and their appreciation for aesthetics and problem-solving to also thrive. This study also provides fresh insight into the importance of diligence (the facet of conscientiousness reflective of a tendency to work hard, be disciplined, have a strong work ethic and motive to achieve and it predicted motivation in the overall sample and self-efficacy and task and ego goal orientation in men. Diligence has previously predicted autonomous regulation in both males and females (Lodewyk, 2019b); physical activity level, fitness level, PE grade (Lodewyk, 2019b), and effort in males (Lodewyk & Gao, 2020); and enjoyment (Lodewyk & Gao, 2020) and self-efficacy in females (Lodewyk, 2018). The study also illuminates the importance of facets within the honesty-humility and agreeableness dimensions of personality such as fairness (overall), greed-avoidance (in women), and sincerity, gentleness, and lower forgiveness (in men).

More research is needed prior to making any firm assertions from this study about the potential role of personality facets on student motivation in PE. For example, studies are needed to confirm the main findings herein, namely that enjoyment was predicted by three facets overall (four in men, one in women) followed by three predicting PA (one in men, one in women) and two for each of AS (none in men, one in women), SE (three in men, one in women), and EGO and TGO (two each in men and women). These results align somewhat with existing findings in female high school PE students that liveliness predicted enjoyment, prudence predicted effort (Lodewyk, 2019b),

forgiveness predicted lower anxiety, and creativity predicted self-efficacy, and fearfulness predicted lower intention to exercise in males (Lodewyk, 2018). Finally, additional gender-based studies into the associations between personality facets and other advantageous outcomes and movement forms (e.g., dance, fitness, team and individual-dual games) in PE are welcomed. It is also important to confirm and understand more about gender differences in this study such the finding that none of the extraversion or openness to experience facets predicted motivational outcomes in men whereas none of the agreeableness and conscientious facets did so in women. These findings add support for joint facet and dimension-based studies of trait personality because the latter has revealed links between conscientiousness, emotionality, and participation and motivation in physical activity (Wilson & Dishman, 2015); and specifically in females, anxiety tends to foster harmful social comparisons that can dampen fitness and activity levels in those more emotional, perfectionistic, and less agreeable (Dishman et al., 2005; Swami et al., 2013). It is also likely that associations between the facets and availing outcomes in PE may vary by the setting and by the motivational and/or achievement constructs being assessed.

In conclusion, the limitations of this study include the exclusive use of self-report data from one university among which were students' recollections of motivation for previous school-based PE. It is also worth mentioning that any links between personality facets and motivational outcomes in this study are potentially bi-directional so, whereas personality might influence motivation, the opposite could also occur. Despite these considerations, the results of this study signal the utility of acknowledging the potential role that trait personality facets might have on the motivation of students in school-based PE. The study corroborates previous findings about the importance of social self-esteem (especially in women), lower aesthetic appreciation, and diligence on motivation in PE while illuminating the potential importance of greed-avoidance (as a noteworthy predictor of two motivational outcomes in women) and of diligence, sincerity, gentleness, and lower forgiveness in men. Students in PE (especially females) may be more motivationally at risk if they see themselves as unpopular and have a sense of personal worthlessness and if they (especially males) have little self-discipline and are not willing to exert themselves.

5. References

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