

## ASSOCIATIONS BETWEEN TRAIT PERSONALITY AND OUTCOMES BY GENDER IN SECONDARY PHYSICAL EDUCATION

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### ABSTRACT

Trait personality research across many settings has led to several validated dimensions such as honesty-humility, emotionality, extraversion, agreeableness, conscientiousness, and openness to experience. While these personality dimensions have been associated with a host of adaptive outcomes in domains with relevance to physical education, little research has investigated relations between them and important research-based outcomes in school-age physical education students. This study investigates predictive relations by gender between these personality dimensions and six favorable outcomes in high school physical education; namely, autonomous motivation, body size dissatisfaction, victimization, grade, and levels of physical activity and fitness. A survey consisting of established measures was administered to 316 students (155 females; 161 males) in grade 9 and 10 physical education from four high schools in a school district of south-central Canada. Results revealed that, except for with physical activity in girls and body size dissatisfaction in boys, the personality dimensions collectively predicted each outcome in both boys and girls. In both boys and girls, extraversion (and its social self-esteem facet) and conscientiousness (and its diligence facet) were particularly predictive of the outcomes whereas honesty-humility predicted lower victimization. Physical educators may need to acknowledge the potential role of personality with other factors they consider when differentiating their instruction in physical education.

**Keywords:** personality traits, autonomous motivation, body size dissatisfaction, victimization, physical activity, achievement

## ASOCIACIONES ENTRE RASGOS DE PERSONALIDAD Y RESULTADOS POR GÉNERO, EN EDUCACION FISICA SECUNDARIA

### RESUMEN

La investigación de los rasgos de personalidad en muchos entornos ha llevado a varias dimensiones validadas como la honestidad-humildad, la emotividad, la extraversión, la amabilidad, la conciencia y la apertura a la experiencia. Si bien estas dimensiones de la personalidad se han asociado con una serie de resultados de adaptación en dominios con relevancia para la educación física, pocos estudios han investigado las relaciones entre ellos y los resultados basados en la investigación en estudiantes de educación física en edad escolar. Este estudio investiga las relaciones predictivas por género entre estas dimensiones de personalidad y seis resultados favorables en la educación física de la escuela secundaria como son la motivación autónoma, insatisfacción con el tamaño corporal, victimización, grado y niveles de actividad física y estado físico. El cuestionario se aplicó a 316 estudiantes (155 mujeres; 161 hombres) en el grado 9 y 10 en educación física, de cuatro escuelas secundarias en un distrito escolar del centro sur de Canadá. Los resultados revelaron que, a excepción de la actividad física en las niñas y la insatisfacción con el tamaño corporal en los niños, las dimensiones de la personalidad predijeron colectivamente cada resultado, tanto en niños como en niñas. En ambos géneros, la extraversión (y su faceta de autoestima social) y la conciencia (y su faceta de diligencia) fueron particularmente predictivas de los resultados, mientras que la honestidad-humildad predijo una victimización más baja. Los educadores físicos pueden necesitar reconocer el rol potencial de la personalidad con otros factores que consideren al diferenciar su instrucción en educación física.

**Palabras clave:** rasgos de personalidad, motivación autónoma, insatisfacción con el tamaño corporal, victimización, actividad física, logros

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## INTRODUCTION

A critical aim of most physical literacy and school physical education programs is to foster a physically active lifestyle in students (Corbin, 2016; SHAPE America, 2014). Adolescence tends to be a particularly challenging developmental period for this since it is often when puberty and its associated changes occur and when choices, responsibilities, and the need for social acceptance and support increase significantly (Hansen, Steenberg, Palic & Elklit, 2012). Adolescence is also the peak period for bullying and victimization (Pepler, Craig, Connolly, Yuile, McMaster, & Jiang, 2006) and for reduced levels of physical activity and fitness (Dishman, Motl, Sallis et al., 2005), physical self-concept (Gao, Newton, and Carson 2008), and satisfaction with one's body size (Mullan-Harris, Berkowitz-King, & Gordon-Larsen, 2005). These trends coincide with increased attrition from physical education especially when it becomes an optional school subject especially for students reporting negative previous experiences in it (Cale & Harris, 2009; Lodewyk & Pybus, 2012). Attrition from physical education can further compromise adolescents' (particularly girls') daily and long-term physical activity levels (Dishman et al. 2005; Faulkner, Goodman, Adlaf, Irving, Allison, & Dwyer, 2007). For the core learning and retention aims of physical education to be achieved in more students, it is important to consider some prominent factors in this such as level of physical activity, fitness, achievement (grade), autonomous motivation, body size satisfaction, and victimization (How, Whipp, Dimmock, & Jackson, 2013; Hurley & Mandigo, 2010; Lodewyk & Pybus, 2012; Lodewyk & Sullivan, 2015). Although personality traits have been associated with many of these and other factors in physical activity and sport settings with clear relevance to physical education, little research has investigated personality traits in school-age physical education students. Hence, this study in high school physical education students that investigates predictive relations between the six well-established personality dimensions and autonomous regulation, physical activity, fitness, body size dissatisfaction, victimization, and grade in high school physical education students.

*Trait Personality*

Personality traits are defined by Pervin and Cervone (2010, p. 8) as "psychological qualities that contribute to an individual's enduring and distinctive patterns of feeling, thinking, and behaving." Chamorro-Premuzic and Furnham (2005, p. 7) explain personality traits as "used to describe and explain behavior – they are internal (associated with characteristics of the individual, rather than the situation or context) and causal (influence behavior)." Trait personality research across many settings, languages, and cultures, has led to six established personality dimensions known as the HEXACO (Ashton & Lee,

2007), namely: honesty-humility (H), emotionality (E), extraversion (X), agreeableness (A), conscientiousness (C), and openness to experience (O). These are now psychometrically-sound clusters or dimensions of personality traits with five resembling another established “Big-Five” framework (Costa & McCrae, 1992). More specifically, extraversion, conscientiousness, and openness to experience are the most similar; agreeableness and emotionality have slight variations (i.e., changing the name of the neuroticism dimension to emotionality, shifting anger from neuroticism to agreeableness, and sensitivity/sentimentality from agreeableness to emotionality); and a new sixth dimension emerged in the HEXACO framework called honesty-humility. The four primary traits for each of the HEXACO dimensions (with lower values for each reflecting opposite characteristics) are listed in Table 2. The following is a list of adjectives for each dimension with high factor loadings in previous research (Ashton, 2013):

Honesty-humility – sincere, honest, faithful/loyal, modest/unassuming, and fair-minded versus sly, deceitful, greedy, pretentious, hypocritical, boastful, and pompous; Emotionality – emotional, oversensitive, sentimental, fearful, anxious, and vulnerable versus brave, tough, independent, self-assured, and stable; Extraversion – outgoing, lively, extraverted, sociable, talkative, cheerful, active versus shy, passive, withdrawn, introverted, quiet, and reserved; Agreeableness – patients, tolerant, peaceful, mild, agreeable, lenient, and gentle versus ill-tempered quarrelsome, stubborn, and choleric; Conscientiousness – organized, disciplined, diligent, careful, thorough, and precise versus sloppy, negligent, reckless, lazy, irresponsible, and absent-minded; [Openness to Experience] – intellectual, creative, unconventional, innovative, and ironic versus shallow, unimaginative, and conventional.(p. 71)

Although these personality dimensions have not been investigated much in physical education, they have been in settings such as sport, physical activity, and exercise with clear relevance to physical education. For example, some of the reported associations have been between personality traits and body size dissatisfaction (Swami, Tran, Hoffmann et al., 2013), victimization (Book, Volk, & Hosker, 2012; Hansen et al., 2012), health (Jackson et al., 2011), motivation for and participation in physical activity and sport (Allen et al., 2013; Rhodes & Pfaelli, 2012; Wilson & Dishman, 2015); and, academic coping strategies, engagement, and achievement (Ackerman, 2013). For this reason, we explore whether similar associations will exist between trait personality and six favorable outcomes in high school physical education students.

*Outcomes in Physical Education*

The six favorable or advantageous outcomes in physical education that were selected to be investigated in relation to personality traits in this study were physical activity, fitness, grade, autonomous regulation (of motivation), body size dissatisfaction, and victimization. Physical activity has been linked to several health benefits, including physical, mental, and emotional (Morgan, Tobar, & Snyder, 2010). Despite these noted benefits, physical activity and fitness levels among many children and youth do not meet recommended weekly levels (Craig, Cameron, Russell & Beaulieu, 2001) such as the 150 minutes/week of moderate-to-vigorous physical activity (ParticipACTION, 2016). Promoting and establishing healthy patterns of fitness and physical activity are also core aims of most school physical education curricula (Harris 2005; SHAPE America, 2014). Meanwhile, achievement in the form of a sought-after grade is also a vital outcome in physical education as it has been linked to many achievement-related factors in physical education such as domain value, intention to enroll in physical education, self-efficacy, perceived autonomy support, autonomous motivation, body size dissatisfaction, and weekly exercise outside of physical education (Lodewyk & Pybus, 2012).

Deci and Ryan (2002) explain autonomous regulation as a motivational construct within self-determination theory referring to one's propensity to participate in a behaviour with goals that are more self-referenced and autonomous (intrinsic satisfaction, joy, mastery, and improvement) than those who are more controlled or extrinsic (guilt response and/or to access rewards, skills, and approval) or void of motivation. A large body of research in physical activity settings (e.g., Hagger & Chatzisarantis, 2016) has linked autonomously-regulated motivation to more favourable outcomes such as elevated fitness and participation, motivation, positive attitude, intentions, and self-esteem for exercise. Similar results have been reported in physical education settings (e.g., How et al., 2013; Lodewyk & Pybus, 2012; Ntoumanis, 2005; Ntoumanis, Pensgaard, Martin, & Pipe, 2004) with less autonomously-regulated motivated students being more bored and having lower fitness, self-efficacy, attendance, and grades in physical education; physical activity levels in and outside of physical education; and less value for and likelihood of enrolling in optional physical education.

Body size dissatisfaction – the difference between one's actual and ideal perception of one's body size (Furnham, Titman, & Sleeman, 1994) – has been also been associated with numerous favourable outcomes in physical activity settings including physical education. Originating from and housed within the broader body image literature (Grogan, 2008), body size dissatisfaction has been linked to being lower overall body satisfaction (Evans, 2002; Gao, Newton, & Carson, 2008) and has been associated with less healthy outcomes such as

lowered physical activity and fitness; more excessive exercise, disordered eating and concerns about weight; and, higher anxiety, smoking, and depression (Dishman et al., 2005; Grogan, 2008). The role of body size dissatisfaction seems to differ somewhat by gender. For example, Lodewyk and Sullivan (2015) reported that physical education students desirous of a smaller body size had lower fitness outcomes, self-efficacy (in boys), and higher test anxiety (in girls). It appears that adolescent girls in physical education and elsewhere are more likely than boys to perceive themselves as overweight, to desire a thinner body size, and to exaggerate their body size. For example, Wertheim and Paxton (2011) found that approximately 70% of adolescent girls perceived themselves as overweight; whereas, Mullan-Harris et al. (2005) noted that about one-third of girls misjudged their weight to be abnormal when it was normal. Among adolescent boys in physical education, the emphasis tends to be more than girls on having a large, strong, and fast body; although, there is still a relative balance of males desiring such a body as opposed to one that is thinner (Azzarito & Solmon, 2006; Furnham, Badmin, & Sneade 2002; Ntoumanis et al., 2004).

Finally, victimization is typically unprovoked and undesired “repeated exposure to purposeful attempts to injure or inflict discomfort and pain on another individual through words, physical contact, gestures, or exclusion from a group” (Olweus, 1993, p. 1). Victimization is a problem in schools with 20-25% of children and youth directly involved as either bullies, victims, or both (Juvonen & Graham, 2014). Similar rates of victimization have been reported in high school physical education. For example, a study by Hurley and Mandigo (2010) revealed “that approximately 11.1% of adolescent respondents had experienced physical bullying in physical education; 13.6% had experienced verbal bullying; and 12.8% experienced social bullying. Furthermore, those who experienced frequent bullying in physical education did not intend on taking the class in the future” (p. 1). This corroborates previous research indicating that students who are bullied during physical education are significantly less likely to be engaged and have higher rates of attrition, absenteeism, and fear during physical education (Carney & Merrell, 2001; Lenskyj & van Daalen, 2006). In their review of psychological factors related to bullying victimization in schools, Hansen et al. (2012) reported associations between school-age victims of bullying and illness, avoidance of school, low self-esteem, feelings of loneliness, fear, and anxiety, substance abuse, depression, suicide ideation, and compromised academic achievement, social relationships, and trust in future romantic relationships (in early adulthood especially if the bullying is experienced during adolescence).

Early-to-mid adolescence appears to be a particularly vulnerable period for experiencing bullying as it tends to peak then likely due in part to pubertal

changes and heightened pressure for peer acceptance and social networks (Carney & Merrell, 2001; Pepler et al., 2006). Often to perpetuate a power difference that can often take the form of social, mental, or physical dominance (i.e., superior strength, skills, personality traits, or social status), bullies are generally adept at purposefully identifying and targeting peers who are vulnerable (i.e., outside the norm in, for example, body size, learning disability, and social skills) and who will not resist their aggression and/or harassment (Craig, Pepler, & Blais, 2007). To illustrate, Flintoff and Scratton (2005) reported that shorter, thinner, and less muscular males tend to experience more teasing from classmates. Boys tend to bully more than girls particularly the more overt (direct) form through physical aggression (e.g., striking and kicking), whereas girls are more likely than boys to bully rather covertly (indirectly) in the form of social shunning and spreading rumours (Hong & Espelage, 2012). Hansen et al., (2012) welcomes more research into associations between personality traits (particularly emotionality) and victimization in school-age children.

#### *Personality Traits, Outcomes in Physical Education, and Gender*

Studies in non-physical education settings have reported significant associations between the dimensions of trait personality and the six favorable outcomes in physical education being investigated in this study. For example, body size dissatisfaction has been linked to extraversion and emotionality (Swami et al., 2013); victimization to emotionality (Hansen et al., 2012); bullying to lower honesty-humility, agreeableness, emotionality, and conscientiousness (Book et al., 2012); autonomous motivation to extraversion and conscientiousness (and moderately with openness to experience and lower neuroticism/emotionality) (Ingledeu, Markland, & Sheppard, 2007); physical activity to extraversion (and secondarily conscientiousness and low emotionality with only a modest link for openness to experience) (Rhodes & Pfaelli, 2012; Wilson & Dishman, 2015); sport participation with extraversion, conscientiousness, and lower emotionality (Allen et al., 2013); and, academic achievement to conscientiousness (and less so openness to experience and low emotionality) (Ackerman, 2013).

Differences by gender in body image, physical activity, personality, and motivation and preferences in physical education are also common in the research literature. To illustrate some of these differences, compared to males, adolescent females tend to be less active and fit (Dishman et al., 2005) and are more likely to perceive themselves as being overweight (Azzarito & Solmon, 2006; Evans, 2002). In addition to lower levels of self-efficacy and enjoyment and elevated anxiety in physical education among girls than boys (Flintoff & Scratton, 2006), gender variations have also been reported in some of the

HEXACO personality dimensions, physical activity, fitness, body size dissatisfaction, and victimization. For example, girls typically have higher levels of emotionality (including in physical activity settings), and higher emotionality, extraversion, agreeableness, and conscientiousness in sport settings (Allen et al., 2013). In terms of activity preferences in physical education, girls are more likely to prefer more novel activities and individual sports compared to boys who more value relatively traditional team-based activities and weight-training (Kann et al., 2000; Lodewyk & Pybus, 2012).

The shortage of studies on potential associations between the six dimensions of trait personality and favorable outcomes in school-age physical education students justifies this investigation. Calls have also been made for more studies investigating gender differences and personality dimension facets or sub-scales (Rhodes & Pfaeffli, 2012; Wilson & Dishman, 2015). Therefore, this study investigates gender-specific predictive relations between the HEXACO dimensions of trait personality and autonomous regulation, body size dissatisfaction, victimization, physical education grade, and levels of physical activity and fitness in high school physical education students. The four research objectives of the study are to assess (1) gender differences in the personality dimensions and outcomes; and, trait personality predictions of the six outcomes collectively (2), dimensionally (3), or by facet (4) as a function of gender.

## METHOD

### *Participants and Procedure*

Following ethical approval from all necessary levels (i.e., university, school board, principal, parent, and student), a survey administered by the lead author or qualified graduate student during students' PE class and requiring approximately 25 minutes in total to complete, was completed by 319 PE students. This study investigates some of the collected data. Data screening warranted the deletion of three outliers for excessive Mahalanobis distance values ( $\alpha^2 = .001$ ; Tabachnick & Fidell, 2006); hence, a final sample of 316 students (83% Caucasian; 155 females; 161 males) from grade 9 ( $n = 173$ ) or 10 ( $n = 143$ ) across four suburban independent high schools in one school district of south-central Canada. Each school and class followed their provincially-mandated Physical and Health Education curriculum for ninth and tenth grade. Approximately 10% of the students were either absent or chose not to participate in the study with the latter working on another learning activity provided by the researchers while participants completed the survey.

### Measures

*Demographics, Fitness Level, and Grade.* Several survey items requested participants to disclose some demographic information (e.g., gender, ethnicity), “the grade they usually receive in high school physical education” (estimated grade; grade), their perceived fitness level (“Compared to others your age and gender, which of the following most closely describes your level of fitness.”) rated on a five-point Likert scale (0 = very poor, 4 = very good). This estimate of fitness level (e.g., Haugen, Ommundsen, & Seiler, 2013) and grade have been used previously in educational (e.g., Winne & Jamieson-Noel, 2002) and physical education research (e.g., Lodewyk & Sullivan, 2015).

*Body Size Dissatisfaction.* The following two items were used to measure body size dissatisfaction: “The number of which person below (1) most resembles how you would like other people to see your body;” and, (2) “most resembles how you see your body.” For these items, students chose one of nine gender-specific silhouettes ranging from “very thin/slender” (scored 1) to “very large/overweight” (scored 9). The overall value was the first (ideal) score subtracted from the second (current) score; hence, ranging from 8 to -8 with positive scores indicating a preference for a smaller body size and negative scores for a larger body size. This measure was developed by Furnham et al. (1994) and has been used successfully by many others since then (e.g., Lodewyk & Sullivan, 2015; Swami et al., 2013).

*Victimization.* Victimization was assessed using the sum of six-items tapping the frequency of racial/ethnic, verbal, physical, threatening, negative rumoring and sexual victimization during physical education. Participants used a 5- point Likert-scale (1 = never and 5 = all the time) and a sample item was: “In the last 4 months in physical education, how often has someone much stronger or popular hit, slapped, or pushed you?” This scale has been used previously with adolescents (e.g., Volk & Lagzdins, 2009) with suitable psychometric properties including alpha reliability of .82 and a cohesive factor structure with item loadings ranging from .45 to .81 (e.g., Book et al., 2012; Volk & Lagzdins, 2009).

*Physical Activity Level.* The sum of three-items used previously (e.g., Australian Institute of Health and Welfare, 2003; Haugen et al., 2013) were used to assess students’ weekly level of moderate, vigorous and strength-training forms of physical activity (physical activity). On a scale from 0 (none) to 7 (every day) and the stem “How many days in the last week did you exercise/participate in...” participants responded to these items: (1) physical activity for at least 20 minutes to the extent that it made you sweat and/or breathe hard (such as basketball, running, swimming, or fast cycling);” (2) “physical activity for at least 30 minutes that did not make you sweat and/or

breathe hard (such as fast walking or slow bicycling or swimming);” and, (3) “strength training such as push-ups, sit-ups, or weight-lifting?”

*Autonomous Regulation of Exercise.* The six-item autonomous regulation for exercise scale from the 15-item *Treatment Self-Regulation Questionnaire* (Ryan & Connell, 1989) was used as a measure of a person’s likelihood of choosing to participate in a healthy behavior like regular exercise for rather self-determined or intrinsic reasons (Williams, Freedman & Deci, 1996). Scored on a 7-point Likert scale (1 = Not at all true of me; 7 = Very true of me), previous uses of the scale (e.g., Williams et al., 1996) have revealed satisfactory alpha reliability ( $\alpha = .81$ ) including in PE ( $\alpha = .90$ ; Lodewyk & Pybus, 2012). A sample item is: “The reason I would exercise regularly is because I personally believe it is the best thing for my health.”

*Trait Personality.* The well-used and validated HEXACO Personality Inventory – Revised (HEXACO-PI-R) developed by Lee and Ashton (2004; see also Ashton & Lee, 2007 for validation evidence) was used to assess trait personality. Using a 5-point Likert-type scale (1 = strongly disagree, 5 = strongly agree) and the mean of items in a scale, 96 of the 100-items (the 4-item altruistic facet is an optional addendum to the measure and not part of the measure of the six dimensions or their facets) assessing the six HEXACO dimensions of trait personality were used. Each of the six dimensions housed four facets (sub-scales; see Table 2) that were each made up of four items. In addition to much previous research using the HEXACO cited earlier, a recent study by Bogaert, Ashton, and Lee (2018) showed good measurement invariance across gender for the six HEXACO factors.

### *Data analysis*

Variables were screened for normality, descriptive statistics and alpha reliability coefficients were computed for all scales, and Pearson bivariate correlation coefficients were reported. MANOVA ( $p > .05$ ) was used to test gender differences in the six (HEXACO) personality dimensions and then in the six outcomes (autonomous regulation, body size dissatisfaction, physical activity, fitness level, estimated physical education grade, and victimization). Personality dimension predictors of those outcomes in physical education were tested using regression analyses simultaneously entering the six HEXACO personality dimensions as predictors and using separate regressions for each of the six outcomes. For example, one regression analysis tested the prediction of physical education grade by the six HEXACO dimensions. Univariate analysis then investigated the strength of each HEXACO dimension on that grade. Finally, testing if the personality facets predicted the outcomes in physical education was performed by regression analyses with the four facets for each personality dimension entered as predictors of each of the six outcomes using a separate

analysis for each of the outcomes). For example, one of these regressions tested the prediction of autonomous regulation by the four facets of the extraversion.

## RESULTS

The descriptive statistics and correlations are provided in Tables 1 and 2. The data met the criteria for normality (Tabachnick & Fidell, 2006) and the alpha reliability was satisfactory for the (.72 - .90) personality dimensions and autonomous regulation which were scales with more than one item and not summed. Three personality sub-facets (sincerity = .44; anxiety = .49; and unconventionality = .29) with alpha reliability coefficients lower than .50 were omitted. Three others (gentleness = .58, flexibility = .56, and aesthetic appreciation = .58) with alpha reliability values lower than .60 were included based on McRae's (2015; see also De Vries, 2013 for application to the HEXACO facets) assertions that the inclusion of these do not seriously compromise validity. Correlations between the non-personality scales in this study revealed no signs of multi-collinearity. Except for the grade and physical activity relationship in girls ( $r = .14$ ), the three primary outcome measures (physical activity, fitness, and grade) related significantly ( $p < .01$ ;  $r = .22 - .44$ ) in both boys and girls. Scales with few significant relationships were victimization which did not relate to any of the other scales beyond autonomous regulation in boys, and BSD which related only to fitness in boys and physical activity and fitness in girls.

TABLE 1  
*Descriptive Statistics and Correlations for Personality Dimensions and Outcomes by Gender.*

Scales	H	Em	Ex	A	C	O	AR	BSD	V	PAL	FL	EGr
$\alpha$	.79	.76	.83	.82	.80	.72	.90	-	-	-	-	-
Girls												
Mean	3.65	3.35	3.32	3.06	3.40	2.94	5.30	.96	7.01	9.70	2.38	84.00
SD	.44	.46	.51	.53	.53	.53	1.15	1.09	1.63	3.79	.74	7.76
Boys												
Mean	3.31	2.91	3.36	3.07	3.18	2.89	5.24	-.07	7.79	10.74	2.67	83.41
SD	.53	.45	.56	.50	.45	.51	1.27	1.19	2.57	4.11	.84	9.41
Correlations by Gender												
H	-	.01	-.23**	.33**	.19*	.12	.03	.10	-.26**	-.15	-.24**	-.08
Em	.06	-	-.11	.06	.01	.23**	-.13	-.07	-.08	-.05	-.20*	-.12
Ex	-.13	.05	-	.11	.12	.21**	.26**	.00	-.03	.23**	.41**	.26**
A	.22**	-.13	.10	-	.26**	.21**	.13	.09	-.26**	-.06	.01	-.01
C	.20*	.03	-.02	.09	-	.32**	.17*	-.01	-.24**	.11	.09	.15
O	.24**	-.03	-.05	.12	.09	-	.15	.06	-.23**	.08	.03	-.02
AR	-.03	.00	.28**	-.01	.15	-.06	-	-.04	-.18*	.25**	.33**	.33**
BSD	.09	-.01	-.13	-.13	-.18*	.10	-.01	-	-.10	-.05	-.18*	-.01
V	-.25**	.00	.06	-.20*	-.23**	-.11	.00	.04	-	-.01	.01	-.05
PAL	.01	-.01	.12	.08	-.04	-.04	.16*	-.17*	.05	-	.42**	.22**
FL	-.23**	.08	.21**	.01	.02	-.21**	.31**	-.28**	.08	.33**	-	.41**
EGr	.02	.04	.23**	.02	.34**	-.09	.35**	-.12	.07	.14	.44**	-

*Note.*  $N = 316$ ; Girls ( $n = 155$ , Lower Diagonal), Boys ( $n = 161$ , Upper Diagonal). *SD* = Standard Deviation; *H* = Honesty=Humility, *Em* = Emotionality; *Ex* = Extraversion, *A* = Agreeableness, *C* = Conscientiousness; *O* = Openness to Experience; *AR* = Autonomously Regulated Motivation for Exercise; *BSD* = Body Size Dissatisfaction; *V* = Victimization; *PAL* = Physical Activity Level; *FL* = Fitness Level; *EGr* = Self-Estimates of PE grade. \*  $p < .05$ ; \*\*  $p < .01$ .

TABLE 2  
Descriptive Statistics and Correlations (*r*) for Personality Facets and Outcomes by Gender.

$\alpha$	Girls							Boys							
	M (SD)	AR	BSD	V	PAL	FL	EGr	M (SD)	AR	BSD	V	PAL	FL	EGr	
H1	.68	4.01 (.66)	-.04	.07	-.21**	-.03	-.21**	-.02	3.57 (.82)	.10	.00	-.33**	-.12	-.19**	-.04
H2	.74	3.18 (.77)	.06	.09	-.09	-.02	-.14*	.05	2.82 (.80)	-.05	.07	-.10	-.09	-.17*	-.10
H3	.60	3.95 (.58)	.00	.09	-.17*	.11	-.14*	.05	3.52 (.71)	.05	.11	-.20**	-.13*	-.17*	.02
Em1	.64	3.08 (.75)	-.18**	.02	-.09	-.09	.09	-.11	2.66 (.69)	-.09	-.07	-.02	-.16*	-.24**	-.10
Em2	.66	3.05 (.79)	.05	.00	.05	.05	.13	.19**	2.73 (.69)	-.14*	.00	-.03	.05	-.11	-.13*
Em3	.69	3.59 (.71)	.13*	-.02	.00	.06	.14*	.10	3.06 (.69)	.01	-.11	-.12	.08	-.05	.03
Ex1	.67	3.34 (.67)	.11	-.29**	.05	.04	.15*	.29**	3.62 (.71)	.25**	-.03	-.17*	.17**	.39**	.33**
Ex2	.72	2.88 (.80)	.20**	.13	.05	.03	.06	.12	3.00 (.82)	.19**	-.09	.11	.26**	.35**	.21**
Ex3	.68	3.54 (.71)	.24**	-.11	.11	.12	.27**	.08	3.38 (.72)	.16*	.05	.06	.15*	.25**	.07
Ex4	.68	3.54 (.67)	.24**	-.14*	-.02	.16*	.14*	.19**	3.46 (.65)	.20**	.10	-.12	.11	.26**	.18**
A1	.64	2.95 (.69)	.05	-.09	-.18*	.01	-.02	.00	2.97 (.63)	.04	.10	-.05	-.05	-.05	.10
A2	.58	3.32 (.58)	.10	-.11	-.22**	.11	.14*	.10	3.31 (.63)	.14*	.00	-.33**	.10	-.05	-.05
A3	.56	2.86 (.70)	-.10	-.10	-.14*	.09	.01	.02	2.94 (.65)	.09	-.04	-.05	.08	.09	-.08
A4	.75	3.11 (.75)	-.07	-.10	-.11	.04	-.08	-.03	3.08 (.81)	.10	.16*	-.31**	.03	.04	.01
C1	.64	3.31 (.75)	.05	-.16*	-.21**	-.01	-.01	.13*	3.21 (.71)	.19**	.07	-.08	.05	.02	.09
C2	.69	3.31 (.86)	.22**	-.14*	-.13	.00	.08	.41**	3.62 (.59)	.26**	-.07	-.18*	.17**	.32**	.26**
C3	.64	3.41 (.74)	.07	-.10	-.02	-.08	-.01	.21**	3.01 (.66)	.04**	-.06	-.21**	.08	.06	.10
C4	.63	3.08 (.63)	.12	-.11	-.34**	-.04	.01	.29**	2.87 (.64)	.00	.02	-.22**	.01	-.11	-.03
O1	.58	2.85 (.83)	-.04	.09	-.13	-.04	-.19*	-.12	2.43 (.79)	-.02	.12	-.19**	.03	-.11	-.16*
O2	.63	2.30 (.81)	.08	.04	-.14*	.01	-.15*	.05	2.73 (.80)	.13	.09	-.08	.05	-.02	-.03
O3	.71	3.35 (.92)	-.16*	.05	.01	-.06	-.16*	-.13	3.13 (.86)	.05	-.04	-.16*	.06	.13*	.05

Note. *N* = 316 (153 girls, 160 boys).  $\alpha$  = alpha reliability. *H* = Honesty-Humility; *E* = Emotionality; *X* = Extraversion; *A*=Agreeableness; *C*=Conscientiousness; *O*=Openness to Experience; *H1*= Fairness; *H2*= Greed Avoidance; *H3*= Modesty; *Em1*=Fearfulness; *Em2*=Dependence; *Em3*=Sentimentality; *Ex1*=Social Self-Esteem; *Ex2*=Social Boldness; *Ex3*=Sociability; *Ex4*=Liveliness; *A1*=Forgiveness; *A2*=Gentleness; *A3*=Flexibility; *A4*=Patience; *C1*=Organization; *C2*=Diligence; *C3*=Perfectionism; *C4*=Prudence; *O1*=Aesthetic Appreciation; *O2*=Inquisitiveness; *O3*=Creativity; *AR* = Autonomous Regulation; *BSD* = Body Size Dissatisfaction; *V* = Victimization; *PAL* = Physical Activity Level; *FL* = Fitness Level; *EGr* = Estimated Grade. \*  $p < .05$ ; \*\*  $p < .01$ .

Results of the MANOVA testing the first of the study objectives (gender differences in personality and the six outcome variables) revealed a significant main effect [ $F(6, 306) = 19.98, p < .001, \eta^2 = .28$ ] with girls higher in *H* [ $F(1, 311) = 9.23, p < .001, \eta^2 = .11$ ]; *E* [ $F(1, 311) = 14.84, p < .001, \eta^2 = .19$ ]; and *C* [ $F(1, 311) = 15.75, p < .001, \eta^2 = .05$ ]. The MANOVA testing gender differences in autonomous regulation, *BSD*, physical activity, fitness, grade, and victimization also revealed a significant main effect difference [ $F(6, 293) = 11.97, p < .001, \eta^2 = .197$ ]. Girls were significantly higher in *BSD*,  $F(1, 298) = 58.92, p < .001, \eta^2 = .165$ ; whereas boys were higher in fitness,  $F(1, 298) = 10.75, p = .001, \eta^2 = .035$ ; physical activity,  $F(1, 298) = 4.27, p = .040, \eta^2 = .014$ ; and victimization,  $F(1, 298) = 10.11, p = .002, \eta^2 = .033$ . No statistical gender difference was observed in grade ( $p = .553$ ) or autonomous regulation ( $p = .643$ ).

For the second objective of this study (personality predictors of outcomes in PE by gender), separate regression analyses by gender were performed each simultaneously entering the six personality dimensions as predictors of each of the outcome variables (autonomous regulation, BSD, physical activity, fitness, grade, and victimization). These six analyses revealed that – except for physical activity in girls,  $R^2 = .02$ ,  $F(6, 146) = .58$ ,  $p = .743$ ; and, BSD in boys,  $R^2 = .03$ ,  $F(6, 153) = .65$ ,  $p = .687$  – personality predicted each of the outcome variables. The results for girls were:  $R^2 = .11$ ,  $F(6, 142) = 2.87$ ,  $p = .011$  for autonomous regulation;  $R^2 = .09$ ,  $F(6, 146) = 2.37$ ,  $p = .033$  for BSD;  $R^2 = .13$ ,  $F(6, 142) = 3.42$ ,  $p = .003$  for victimization;  $R^2 = .12$ ,  $F(6, 146) = 3.43$ ,  $p = .003$  for fitness; and,  $R^2 = .19$ ,  $F(6, 146) = 5.54$ ,  $p < .001$  for grade. The results for boys were:  $R^2 = .12$ ,  $F(6, 141) = 3.08$ ,  $p = .007$  for autonomous regulation;  $R^2 = .15$ ,  $F(6, 141) = 4.19$ ,  $p = .001$  for victimization;  $R^2 = .08$ ,  $F(6, 153) = 2.24$ ,  $p = .042$  for physical activity;  $R^2 = .22$ ,  $F(6, 153) = 7.28$ ,  $p < .001$  for fitness; and,  $R^2 = .10$ ,  $F(6, 153) = 2.86$ ,  $p = .011$  for grade.

For the third objective, X was the personality dimension to predict the most outcomes as it positively predicted autonomous regulation, fitness, and grade in both boys and girls; and physical activity in boys. Specific results for girls were:  $\beta = .29$ ,  $t = 3.57$ ,  $p < .001$  for autonomous regulation;  $\beta = .17$ ,  $t = 2.17$ ,  $p = .031$  for fitness; and  $\beta = .24$ ,  $t = 3.13$ ,  $p = .002$  for grade. Among boys the results were:  $\beta = .22$ ,  $t = 2.58$ ,  $p = .011$  for autonomous regulation;  $\beta = .19$ ,  $t = 2.28$ ,  $p = .024$  for physical activity;  $\beta = .34$ ,  $t = 4.32$ ,  $p < .001$  for fitness; and,  $\beta = .25$ ,  $t = 2.99$ ,  $p = .003$  for grade. C also emerged as a predictor of several outcomes in girls:  $\beta = .16$ ,  $t = 2.02$ ,  $p = .045$  for autonomous regulation;  $\beta = .36$ ,  $t = 4.64$ ,  $p < .001$  for grade; negatively for BSD ( $\beta = -.20$ ,  $t = -2.32$ ,  $p = .014$ ); and  $\beta = -.19$ ,  $t = -2.34$ ,  $p = .020$  for victimization. H was only a predictor of lower victimization in both boys ( $\beta = -.19$ ,  $t = -2.19$ ,  $p = .031$ ) and girls ( $\beta = -.17$ ,  $t = -2.06$ ,  $p = .041$ ). Finally, E only predicted lower fitness in boys ( $\beta = -.16$ ,  $t = -2.09$ ,  $p = .038$ ) and O predicted only lower fitness in girls ( $\beta = -.16$ ,  $t = -2.04$ ,  $p = .043$ ). A did not significantly ( $p < .05$ ) predict any of the six outcomes. Hence, the HEXACO dimensions predictive of the most outcomes in physical education were extraversion (physical activity in boys and autonomous regulation, fitness, and grade in both boys and girls) followed by conscientiousness (predicting autonomous regulation, grade, and lower body size dissatisfaction and victimization in girls).

The results of the final objective of this study (gender-specific personality facet correlations and predictors of outcomes in PE; see Table 2, 3, and 4) revealed that the social self-esteem facet of X predicted three of the six outcomes in boys (fitness,  $p = .002$ ; grade,  $p = .002$ ; and victimization inversely,  $p = .007$ ) and two in girls (grade,  $p = .003$ ; BSD inversely,  $p < .001$ ). Social boldness (facet of X) predicted two outcomes in boys (victimization,  $p = .009$ ;

physical activity,  $p = .019$ ) and one in girls (BSD,  $p = .001$ ). Sociability only predicted fitness in girls ( $p = .003$ ). For the facets of C, diligence emerged as a prominent predictor of the outcomes predicting four in boys (autonomous regulation,  $p = .002$ ; physical activity,  $p = .04$ ; fitness,  $p < .001$ ; and, grade,  $p = .002$ ) and one in girls (autonomous regulation,  $p = .015$ ). Prudence predicted grade ( $p = .026$ ) and victimization inversely ( $p < .001$ ) in girls; and fitness inversely ( $p = .009$ ) in boys. Of the E facets, fearfulness inversely predicted autonomous regulation ( $p = .005$ ) and grade ( $p = .046$ ) in girls, and, fitness ( $p = .003$ ) and physical activity ( $p = .015$ ) in boys; dependence inversely predicted grade in girls ( $p = .027$ ); and sentimentality predicted autonomous regulation in girls ( $p = .03$ ). Of the A facets, only gentleness emerged as a predictor in girls (of fitness,  $p = .017$ ), whereas in boys, gentleness inversely predicted victimization ( $p = .001$ ) and patience predicted BSD (positively;  $p = .04$ ) and victimization (negatively;  $p = .003$ ). Similarly, of the O facets, only aesthetic appreciation (inversely of grade,  $p = .026$ ) and creativity (positively of fitness,  $p = .034$ ) were predictors among boys. Only one H facet was a predictor (fairness inversely on victimization in boys;  $p < .001$ ). Hence, the most prominent facet predictors of the six outcomes were the social self-esteem facet of X (predicting fitness, grade and lower victimization in boys; and grade and lower BSD in girls), the diligence facet of C (predicting autonomous regulation in both boys and girls; and physical activity, fitness, and grade in boys), and the fearfulness facet of E (predicting lower autonomous regulation and grade in girls; and lower fitness and physical activity in boys).

TABLE 3  
*Significant HEXACO Facet Predictors of Outcomes in PE among Girls.*

	AR		BSD		V		PAL		FL		EGr	
	$\beta$	T	$\beta$	t	$\beta$	t	$\beta$	t	$\beta$	t	$\beta$	t
H1: Fairness	-.07	-.71	.04	.40	-.17	-1.92	-.06	-.64	.17	1.93	-.05	-.51
H2: Greed Avoid	.08	.88	.06	.62	-.01	-.07	-.05	-.59	-.07	-.78	.05	.55
H3: Modesty	-.01	-.04	.07	.73	-.11	-1.27	.14	1.59	-.07	-.79	.05	.52
Em1: Fearfulness	-.24	-2.87**	.03	.37	-.10	-1.15	-.12	-1.41	-.15	-1.76	-.17	-2.01*
Em2: Dependence	.02	.18	.01	.08	.06	.68	.04	.49	.10	1.17	.19	2.23*
Em3: Sentimentality	.19	2.19*	-.03	-.37	.01	.10	.08	.86	.15	1.66	.08	.94
Ex1: Social Self Est	.02	.23	-.31	-3.81***	.05	.56	-.01	-.14	.12	1.43	.25	3.05**
Ex2: Social Bold	.07	.78	.31	3.55**	.02	.16	-.06	-.66	-.10	-1.11	.01	.15
Ex3: Sociability	.14	1.49	-.14	-1.60	.14	1.43	.09	.92	.28	3.05**	-.02	-.23
Ex4: Liveliness	.14	1.50	-.11	-1.17	-.11	-1.09	.15	1.57	.02	.20	.12	1.25
A1: Forgiveness	.11	1.04	-.01	-.08	-.09	-.89	-.09	-.90	-.07	-.65	-.04	-.34
A2: Gentleness	.14	1.51	-.08	-.82	-.18	-1.90	.12	1.30	.23	2.42*	.14	1.44
A3: Flexibility	-.13	-1.35	-.05	-.50	-.06	-.58	.10	1.02	.06	.56	.04	.36
A4: Patience	-.12	-1.11	-.03	-.32	.05	.45	-.01	-.13	-.17	-1.63	-.09	-.84
C1: Organization	-.02	-.21	-.12	1.39	-.13	-1.54	.02	.21	-.03	-.30	-.04	-.44
C2: Diligence	.25	2.45*	-.08	-.78	-.06	-.62	.07	.65	.13	1.24	.39	4.22***
C3: Perfectionism	-.09	-.84	.001	.01	.18	1.88	-.11	-1.09	-.07	-.67	-.07	-.78
C4: Prudence	.06	.60	-.04	-.46	-.34	-3.84***	-.03	-.35	.00	-.05	.19	2.25*
O1: Aesthetic App.	.01	.09	.08	.86	-.12	-1.30	-.02	-.16	-.12	-1.27	-.11	-1.13
O2: Inquisitiveness	.08	.95	.01	.15	-1.07	-1.24	.02	.17	-.11	-1.25	.09	1.02
O3: Creativity	-.17	-1.88	.01	.11	.07	.73	-.06	-.64	-.10	-1.15	-.09	-.97

*Note.*  $N = 316$ ;  $\beta$  values = standardized regression coefficients. *H* = Honesty=Humility, *Em* = Emotionality; *Ex* = Extraversion, *A* = Agreeableness, *C* = Conscientiousness, *O* = Openness to Experience, *Est.* = Esteem; *App.* = Appreciation; *AR*=Autonomous Regulation, *BSD*=Body Size Dissatisfaction, *PAL*=Physical Activity Level, *FL*=Fitness Level; *EGr*=Estimated PE Grade. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

TABLE 4  
Significant HEXACO Facet Predictors of Outcomes in PE among Boys.

	AR		BSD		V		PAL		FL		EGr	
	B	t	$\beta$	t	$\beta$	t	$\beta$	t	$\beta$	t	$\beta$	t
H1: Fairness	.13	1.40	-.07	-.74	-.33	-3.70***	-.07	-.79	-.12	-1.36	-.01	-.10
H2: Greed Avoid	-.13	-1.37	.06	.60	.08	.90	-.03	-.28	-.08	-.88	-.13	-1.39
H3: Modesty	.06	.63	.11	1.28	-.11	-1.31	-.09	-1.04	-.10	-1.10	.07	.83
Em1: Fearfulness	-.09	-1.02	-.05	-.59	.02	.19	-.20	-2.46*	-.25	-3.00**	-.10	-1.22
Em2: Dependence	-.16	-1.76	.06	.65	.01	.16	.04	.51	-.08	-.92	-.16	-1.80
Em3: Sentimentality	.09	1.03	-.12	-1.30	-.13	-1.45	.12	1.37	.06	.71	.12	1.38
Ex1: Social Self Est	.18	1.96	-.04	-.39	-.25	-2.71**	.07	.76	.27	3.16**	.29	3.20**
Ex2: Social Bold	.05	.44	-.19	-1.85	.27	2.64**	.24	2.37*	.18	1.92	.09	.97
Ex3: Sociability	.04	.39	.08	.78	.10	.98	.03	.34	.06	.61	-.10	-1.06
Ex4: Liveliness	.08	.84	.17	1.68	-.19	-1.89	-.05	-.52	.03	.34	.07	.69
A1: Forgiveness	-.04	-.37	.08	.89	.15	1.66	-.03	-.34	-.09	-.95	.16	1.73
A2: Gentleness	.12	1.20	-.07	-.79	-.32	-3.56**	-.10	-1.09	-.10	-1.08	-.07	-.78
A3: Flexibility	.03	.36	-.09	-1.06	.11	1.33	-.05	-.61	.13	1.45	-.11	-1.22
A4: Patience	.05	.56	.19	2.07*	-.27	-3.04**	.10	1.06	.08	.92	.01	.08
C1: Organization	.17	1.96	.12	1.34	.04	.45	.00	.03	-.04	-.50	.03	.36
C2: Diligence	.29	3.23**	-.08	-.93	-.07	-.81	.18	2.03	.41	4.81***	.28	3.22**
C3: Perfectionism	-.10	-1.10	-.07	-.80	-.15	-1.64	.01	.16	-.03	-.39	.01	.13
C4: Prudence	-.12	-1.38	.03	.35	-.16	-1.79	-.05	-.62	-.21	-2.64**	-.13	1.50
O1: Aesthetic App.	-.10	-1.09	.13	1.37	-.17	-1.85	-.01	-.06	-.18	-1.95	-.21	-2.25*
O2: Inquisitiveness	.17	1.79	.05	.51	.01	.15	.04	.46	.03	.36	.04	.50
O3: Creativity	.05	.61	-.08	-.99	-.12	-1.40	.05	.62	.18	2.13*	.11	1.28

Note.  $N = 316$ ;  $\beta$  values = standardized regression coefficients. *H* = Honesty=Humility, *Em* = Emotionality; *Ex* = Extraversion, *A* = Agreeableness, *C* = Conscientiousness, *O* = Openness to Experience, *Est.* = Esteem; *App.* = Appreciation; *AR*=Autonomous Regulation, *BSD*=Body Size Dissatisfaction, *PAL*=Physical Activity Level, *FL*=Fitness Level; *EGr*=Estimated PE Grade. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ .

## DISCUSSION

The aim of this study was to assess predictive relations as a function of gender between the HEXACO trait personality dimensions and facets and six favorable outcomes in secondary physical education (autonomous motivation for exercise, victimization, body size dissatisfaction, grade, physical activity, and fitness). A central finding of the study was that, except for with physical activity in girls and body size dissatisfaction in boys, the personality dimensions collectively predicted each outcome in both boys and girls. This aligns with research on the importance of personality in both boys and girls in related fields such as sport (Allen et al., 2013), physical activity and exercise (Wilson & Dishman, 2015), and academic settings (Ackerman, 2013).

In this study, extraversion predicted the most (four) outcomes (autonomous regulation, physical activity, fitness, and grade) in both boys and girls in this study. Further, the social self-esteem facet of extraversion also

predicted several outcomes (fitness, grade and lower victimization in boys; grade and lower body size dissatisfaction in girls). The importance of extraversion is evident in previous research showing associations between extraversion and autonomous motivation for exercise (Ingledeu et al., 2007), body size dissatisfaction (Swami et al., 2013); and participation in physical activity (especially of a moderate intensity) (Wilson & Dishman, 2015). Sport-based research has revealed that extraversion has also been most closely and consistently trait personality dimension associated with sport participation (particularly more team-oriented sports) and elite athlete performance (Allen et al., 2013). The social dynamics of physical education and the heightened social sensitivity of adolescents might accentuate the need for extraversion on favorable outcomes in high school physical education in part because being extraverted can help to produce rewards associated with active social engagement (Ashton, 2013).

Conscientiousness also predicted several outcomes although only in girls not boys. Girls higher in conscientiousness (“organized, disciplined, diligent, careful, thorough, and precise”) tended to be higher in autonomous regulation and grade; whereas girls lower in conscientiousness (“sloppy, negligent, reckless, lazy, irresponsible, and absent-minded”) (Ashton, 2013, p.71) were more likely to be higher in body size dissatisfaction and victimization. The importance of conscientiousness is also evident in other research in physical education-related domains. For example, there is consistent evidence for higher conscientiousness in females particularly in sport (Ackerman, 2013; Allen et al., 2013) and of associations between conscientiousness and academic achievement (Ackerman, 2013), autonomous motivation for exercise (Ingledeu et al., 2007), and participation and motivation in physical activity (especially vigorous exercise) and sport (particularly individual sports) (Allen et al., 2013; Wilson & Dishman, 2015). Although conscientiousness was not predictive of any outcomes in boys, the diligence facet of conscientiousness (ambitiously persevering towards the attainment of goals) predicted boys’ autonomous regulation, physical activity, fitness, and grade. Therefore, being generally purposeful and self-disciplined (conscientiousness) was predictive of more outcomes in girls in this study while being goal-oriented (diligent) was more so in boys. Since such conscientiousness traits appear to be advantageous in physical education and other related movement and academic domains (Ackerman, 2013; Allen et al., 2013), it may be useful for physical educators to emphasize to their high school students the need for and development of them.

Lower honesty-humility in both boys and girls (along with lower conscientiousness in girls) predicted victimization. In other words, victimization was more likely in those more sly, deceitful, greedy, pretentious, hypocritical, boastful, and pompous. In boys, victimization was also predicted

by the facets of social boldness (outspoken in group settings) and lower social self-esteem (less satisfied with self and sensing they are disliked and unpopular), fairness (would use unethical means to get ahead), gentleness (are critical of and toward others), and patience (quick-tempered) facets. Other research has also linked lower honesty-humility and conscientiousness to victimization in adolescents although the absence of a predictive relationship between victimization and emotionality or any of its facets is surprising since victimization has been linked to emotionality (Book et al., 2012), anxiety and loneliness (Hansen et al., 2012), and fear during physical education (Carney & Merrell, 2001). It is likely that honesty-humility functions as part of a broader self-concept from which individuals either judge their victimization or are prone to being bullied or to bully (Hansen et al., 2012). For example, Ashton (2013) reports that those low in honesty-humility may strive to reap benefits by exploiting others and that aggression is more likely in those who feel inferior, have low self-worth, and who also project a sense of conceit and power over others. Hence, the personality traits associated with victimization in this study appear to less reflect submissive than a provocative victim described by Salmivalli and Nieminen (2002) as bully-victims since they jointly bully and experience bullying. They report that, compared to submissive victims who are more shy, insecure, and withdrawn, provocative victims (bully-victims) tend to have deficits in emotional regulation and are more likely to react to others impulsively and aggressively. These are also the provocative traits that bullies tend to find emotionally rewarding. It would be useful for future research to directly investigate both submissive and provocative victims in physical education relative to these and other outcomes.

Some additional noteworthy findings of this study were that personality collectively predicted body size dissatisfaction in girls not boys, whereas it predicted physical activity in boys not girls. Further, body size dissatisfaction was predicted by lower conscientiousness and social self-esteem and higher social boldness in girls. The finding that socially outspoken girls are prone to body size dissatisfaction is novel and the absence of links between emotionality and body size dissatisfaction differs from previous findings (Swami et al., 2013). However, the link between conscientiousness and body size dissatisfaction in girls reflects findings by McCreary (2011) that more conscientiousness is associated with the quest to improve body appearance mostly through thinness in girls; and, that girls with a lower self-concept are prone to body size dissatisfaction especially in situations when they might be socially evaluated (Courneya & Hellsten, 1998; Dishman et al., 2005; Swami et al., 2013). The discovery that physical activity was not predicted by any personality dimensions or facets in girls was surprising particularly because of previous research indicating such links especially to extraversion (Allen et al., 2013;

Wilson & Dishman, 2015). Future research should measure physical activity in a variety of forms since it is possible that the measurement of it in this study (as the sum of strength training and moderate and vigorous intensity physical activity) may have obscured the extraversion-physical activity relationship among girls in this study.

The study also revealed overall gender differences in the trait personality dimensions and outcomes as girls were higher in emotionality (ES = .19), honesty-humility (ES = .11), conscientiousness (ES = .05), and body size dissatisfaction (ES = .17), whereas boys were higher in fitness (ES = .04), victimization (ES = .03), and physical activity (ES = .01). These differences reflect previous research revealing girls' lower levels of physical activity and fitness (Dishman et al., 2005) and bullying and victimization (Hong & Espelage, 2012); and higher girls' levels of honesty-humility (Lee & Ashton, 2004) and body size dissatisfaction both overall (Wertheim & Paxton, 2011) and in physical education (Lodewyk & Sullivan, 2015). Research has also reported consistently higher levels in females of emotionality generally (Ashton, 2013), conscientiousness in academic settings (Ackerman, 2013), and emotionality and conscientiousness in sport (Allen et al., 2013). These results suggest the teachers perhaps consider the somewhat generally different personality traits and outcomes of girls and boys in their classes and to somewhat differentiate their content and instruction accordingly. For example, girls who are particularly higher in emotionality and body size dissatisfaction and lower in physical activity and fitness may warrant some accommodations to augment these vulnerabilities. On the other hand, boys especially lower in emotionality, conscientiousness, and honesty-humility; and, higher in victimization, might also need some differentiated efforts from the teacher to better meet their needs.

To conclude, it may be useful for physical education researchers and practitioners to become more familiar with the dimensions of trait personality and their links to the outcomes explored in this study and others including those in related fields. The study notably revealed that students who are more introverted (especially less social self-esteem) and less conscientious (particularly less diligent) are more vulnerable to compromises in several important outcomes in physical education. For example, the link in this study between autonomous regulation for exercise and extraversion in both boys and girls and conscientiousness in girls, reflects research and resulting speculations that self-determination for exercise may be better enhanced in more extraverted and conscientious individuals because of how exercise meets their need for relatedness and competence respectively (Ingledeu et al., 2007). Rather than striving to formally assess or alter students' personality traits, physical educators may need to acknowledge the potential role of personality

with the other factors (e.g., gender, learning style, prior experience) they consider when differentiating their instruction in physical education. For example, this could take the form of providing enhanced choices in physical education that can contribute to feelings of autonomy support and increased physical activity in physical education students (How et al., 2013). The limitations of this study include the use of self-report data, three personality facets with an alpha reliability between .50 and .60, and a one-item measure of fitness level. It would be useful for future research to confirm the results of this study while assessing trait personality in other and more diverse physical education settings and relative to other important outcomes in physical education. For example, more research on the role of extraversion in diverse high school physical education settings is welcomed because extraversion varies as a function of physical activity intensity and the type of sport (i.e., individual or team; recreational or elite) (Wilson & Dishman, 2015).

#### REFERENCES

- Ackerman, P.L. (2013). Personality and cognition. In S. Kreitler. (Ed.), *Cognition and motivation: Forging an interdisciplinary perspective* (pp. 62-75). New York, NY: Cambridge University Press.
- Allen, M.S., Greenlees, I., & Jones, M. (2013). Personality in sport: a comprehensive review. *International Review of Sport and Physical Activity Psychology*, 6(1), 184-208. doi:10.1080/1750984/X.2013.769614
- Ashton, M. C. (2013). *Individual differences and personality* (2<sup>nd</sup> ed.). New York, NY: Elsevier.
- Ashton, M.C. & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Bulletin*, 11, 150-166. doi:10.1177/1088868306294907
- Australian Institute of Health and Welfare (2003). *Indicators of health risk factors: The AIHW Review*. Canberra, Australian Capital Territory, Australia.
- Azzarito, L., & Solmon, M.A. (2006). A post-structural analysis of high school students' gendered and racialized body meanings. *Journal of Teaching in Physical Education*, 25, 75-98.
- Bogaert, A.F., Ashton, M. C., & Lee, K. (2018) Personality and sexual orientation: Extension to asexuality and the HEXACO model. *The Journal of Sex Research*, 55: 951-961, doi: 10.1080/00224499.2017.1287844
- Book, A.S., Volk, A.A., & Hosker, A. (2012). Adolescent bullying and personality: An adaptive approach. *Personality and Individual Differences*, 52, 218-223. doi: 10.1016/j.paid.2011.10.028
- Cale, L., & Harris, J. (2009). Fitness testing in physical education – a misdirected effort in promoting healthy lifestyles and physical activity? *Physical Education and Sport Pedagogy*, 14: 89-108.

- Carney, A., & Merrell, K. (2001). Bullying in schools, Perspectives on understanding and preventing an international problem. *School Psychology International*, 22(3), 364- 382.
- Chamorro-Premuzic, T., & Furnham, A. (2005). *Personality and Intellectual Competence*. Mahwah, NJ: Lawrence Erlbaum.
- Corbin, C. (2016). Implications of physical literacy for research and practice: A commentary. *Research Quarterly for Exercise and Sport*, 87(1), 14-27
- Costa, P.T. Jr., & McCrae, R.R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI): Professional Manual*. Odessa, fitness: Psychological Assessment.
- Courneya, K. S. & Hellsten, L. M. (1998). Personality correlates of exercise behavior, motives, barriers and preferences: An application of the five-factor model. *Personality and Individual Differences*, 24. 625-633. doi:10.1016/S0191-8869(97)00231-6
- Craig, C. L., Cameron, C., Russell, S. J., & Beaulieu, A. (2001). *Increasing physical activity: Supporting children's participation*. Ottawa: Canadian Fitness and Lifestyle Research Institute.
- Craig, W., Pepler, D., & Blais, J. (2007). Responding to bullying: What works? *School Psychology International*, 28, 465-477. doi: 10.1177/0143034307084136
- De Vries, R. E. (2013). The 24-item brief HEXACO inventory (BHI). *Journal of Research in Personality*, 47(6), 871-880. doi:10.1016/j.jrp.2013.09.003
- Deci, E.L., & Ryan, R.M. (2002). *Handbook of self-determination research*. Rochester, NY: University of Rochester Press.
- Dishman, R. K., Motl, R. W., Sallis, J. F., Dunn, A. L., Birnbaum, A. S., Welk, G. J., Bdimou-Rung, A.L., Voorhees, C.C., & Jobe, J.B. (2005). Self-management strategies mediate self-efficacy and physical activity. *American Journal of Preventive Medicine*, 29(1), 10–18. doi:10.1016/j.amepre.2005.03.012
- Evans, B. (2002). Constructing body space: Gender, sport and body image in adolescence. *Journal of Feminist Geography*. Liverpool, U.K.
- Faulkner, G., Goodman, J., Adlaf, E., Irving, E., Allison, K. & Dwyer, J. (2007). Participation in high school physical education - Ontario, Canada, 1999—2005. *Morbidity and Mortality Weekly Report*, 56, 52-54.
- Flintoff, A., & Scratton, S. (2006). Girls and physical education. In D. Kirk, D. MacDonald & M. O'Sullivan (Eds.), *The handbook of physical education* (pp. 767-783). London: Sage.
- Furnham, A., Badmin, N., & Sneade, I. (2002). Body image dissatisfaction: Gender differences in eating attitudes, self-esteem, and reasons for exercise. *Journal of Psychology*, 136, 581-596.

- Furnham, A., Titman, P., & Sleeman, E. (1994). Perception of female body shapes as a function of exercise. *Journal of Social Behavior and Personality*, 9, 335-352.
- Gao, Z., Newton, M., & Carson, R.L. (2008). Students' motivation, physical activity levels, and health-related physical fitness in fitness class. *Middle Grades Research Journal*, 3(4), 21-39.
- Grogan, S. (2008). *Body image: Understanding body dissatisfaction in boys, girls, and children* (2<sup>nd</sup> ed.). New York: Routledge.
- Hagger, M.S. & Chatzisarantis, N. L. (2016). The trans-contextual model of autonomous motivation in education: Conceptual and empirical issues and meta-analysis. *Review of Educational Research*, 86(2), 360-407. doi: 10.3102/0034654315585005
- Hansen, T.B. & Steenberg, L.M., Palic, S., & Elklit, A. (2012). A review of psychological factors related to bullying victimization in schools. *Aggression and Violent Behavior*, 17, 383-387. doi:10.1016/j.avb.2012.03.008
- Harris, J. (2005). Health-related exercise and physical education. In K. Green & K. Hardman (Eds.), *Physical education: Essential issues*. (pp. 78-97). New York, NY: Sage.
- Haugen, T., Ommundsen, Y., & Seiler, S. (2013). The relationship between physical activity and physical self-esteem in adolescents: The role of physical fitness indices. *Pediatric Exercise Science*, 25, 138-153.
- Hong, J.S. & Espelage, D.L. (2012). A review of research on bullying and peer victimization in school: An ecological system analysis. *Aggression and Violent Behavior*, 17, 311-322. doi: 10.1016/j.avb.2012.03.003
- How, Y.M., Whipp, P., Dimmock, J. & Jackson, B. (2013). The effects of choice on autonomous motivation, perceived autonomy support, and physical activity levels in physical education. *Journal of Teaching in Physical Education*, 32, 131-148.
- Hurley, V. & Mandigo, J. (2010). Bullying in physical education: Its prevalence and impact on the intention to continue secondary school physical education. *Phenex*, 2(3), 1-19.
- Ingledeu, D.K., Markland, D., & Sheppard, K.E. (2004). Personality and self-determination of exercise behavior. *Personality and Individual Differences*, 36, 1921-1932. doi: 10.1016/j.paid.2003.08.021
- Jackson, B., Dimmock, J. A., Gucciardi, D. F., & Grove, R. J. (2011). Personality traits and relationship perceptions in coach-athlete dyads: Do opposites really attract? *Psychology of Sport and Exercise*, 12(3), 222-230. doi:10.1016/j.psychsport.2010.11.005
- Juvonen J. & Graham, S. (2014). Bullying in schools: The power of bullies and the plight of victims. *Annual Review of Psychology*. 65, 159-185. doi:10.1146/annurev-psych-010213-115030.

- Kann, L., Kinchen, S.A., Williams, B.I., Ross, J.G., Lowry, R., Grunbaum, J., & Kolbe, L.J. (2000). Youth risk behavior surveillance – United States 1999. *Journal of School Health, 70*, 271-286.
- Lee, K. & Ashton, M. C. (2004). Psychometric properties of the HEXACO personality inventory. *Multivariate Behavioral Research, 39*, 329-358. doi:10.1207/s15327906mbr3902\_8
- Lenskyj, H. J. & Van Daalen, C. (2006). Look at that cow over there: Sexual harassment and shaming of adolescent girls in high school PE. In E. Singleton & A. Varpalotai (Eds.), *Stones in the sneaker: Active theory for secondary school physical and health educators* (pp.139-154). London, ON: The University of Western Ontario.
- Lodewyk, K.R., & Pybus, C. (2012). Investigating factors in the retention of students in high school physical education. *Journal of Teaching in Physical Education, 32*, 61-77. doi:10.1123/jtpe.32.1.61
- Lodewyk, K.R. & Sullivan, P. (2015). Associations between anxiety, self-efficacy, and outcomes by gender and body size dissatisfaction during fitness in high school physical education. *Physical Education and Sport Pedagogy, 21*, 601-615.
- McCrae, R. R. (2015). A more nuanced view of reliability: Specificity in the trait hierarchy. *Personality and Social Psychology Review, 19*(2), 97-112. doi:10.1177/1088868314541857
- McCreary, D.R. (2011). Body image and muscularity. In T.F. Cash & L. Smolak (Eds.). *Body Image: A Handbook of science, practice, and prevention* (pp. 198-205). New York: Guildford.
- Morgan, A.L., Tobar, D.A., & Snyder, L. (2010). Walking toward a new me: The impact of prescribed walking 10,000 steps/day on physical and psychological well-being. *Journal of Physical Activity and Health, 7*, 299-307.
- Mullan-Harris, K., Berkowitz-King, R. & Gordon-Larsen, P. 2005. Healthy habits among adolescents. In K.A. Moore & L.H. Lippman (Eds.), *What do children need to flourish? Conceptualizing and measuring indicators of positive development* (pp. 111-132). New York, NY: Springer.
- Ntoumanis, N. (2005). A prospective study of participation in optional school physical education using a self-determination theory framework. *Journal of Educational Psychology, 97*, 444-453.
- Ntoumanis, N., Pensgaard, A. M., Martin, C., and Pipe, K. 2004. An ideographic analysis of amotivation in compulsory school physical education. *Journal of Sport and Exercise Psychology, 26*: 197-214.
- Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Oxford: Blackwell Publishers.

- ParticipACTION. (2016). *Follow the guidelines, reap the rewards*. Retrieved from <https://www.participaction.com/enca/thought-leadership/benefits-and-guidelines>
- Pepler, D. J., Craig, W. M., Connolly, J. A., Yuile, A., McMaster, L., & Jiang, D. (2006). A developmental perspective on bullying. *Aggressive Behaviour, 32*, 376-384.
- Pervin, L.A., & Cervone, D. (2010). *Personality: Theory and research* (11<sup>th</sup> ed.). New York, NY: Wiley.
- Rhodes, R. E., & Pfaeffli, L. A. (2012). Personality and physical activity. In O. Acevedo Edmund (Ed.), *The Oxford Handbook of Exercise Psychology* (pp. 195). New York, NY: Oxford University Press. doi:10.1093/oxfordhb/9780195394313.013.0011
- Ryan, R.M., & Connell, J.P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*, 749-761.
- Salmivalli, C. & Nieminen, E. (2002). Proactive and reactive aggression among school bullies, victims, and bully victims. *Aggressive Behaviour, 28*, 30-44. doi: 10.1002/ab.90004
- SHAPE America. (2014). *National standards and grade-level outcomes for K-12 physical education*. Champaign, IL: Human Kinetics.
- Smith, T.W., Gallo, L.C., Shivpuri, S., & Brewer, A.L. (2012). Personality and health: Current issues and emerging perspectives. In A. Baum, T.A. Revenson, and J. Singer (Eds.), *Handbook of health psychology* (pp. 375-404). New York, NY: Psychology Press.
- Swami, V., Tran, V. S., Hoffmann Brooks, L., Kanaan, L., Luesse, E.-M., Nader, I. W., Pietschnig, J., Stieger, S. & Voracek, M. (2013). Body image and personality: Associations between the Big Five personality factors, actual-ideal weight discrepancy, and body appreciation. *Scandinavian Journal of Psychology, 54*, 146-151.
- Tabachnick, B.G., & Fidell, L.S. (2006). *Using multivariate statistics* (5<sup>th</sup> ed.). Needham Heights, MA: Allyn & Bacon.
- Volk, A. A. & Lagzdins, L. (2009). Bullying and victimization among adolescent girl athletes. *Athletic Insight, 11*, 12-25.
- Wertheim, E.H. & Paxton, S.J. (2011). Body image development in adolescent girls." In T.F. Cash & L. Smolak (Eds.). *Body image: A handbook of science, practice, and prevention* (pp. 76-83). New York, NY: Guildford.
- Williams, G. C., Freedman, Z., & Deci, E.L. (1996). Promoting motivation for diabetics' self-regulation of HbA1c. *Diabetes, 45*, (Supply. 2) 13A.
- Wilson, K.E. & Dishman, R.K. (2015). Personality and physical activity: A systematic review and meta-analysis. *Personality and Individual Differences, 72*, 230-242. doi:10.1016/j.paid.2014.08.023