

# Geographic region effects on adolescent physical self: An exploratory study

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The objectives of this exploratory study were to examine gender differences in physical self-concept, and the influence of geographic place of residence on both adolescents' physical self-concept and gender differences in physical self-concept. The Physical Self Inventory was used to measure physical self-perceptions and global self-esteem. Participants were 323 boys and 282 girls living in the North or South of France. First a Mann-Whitney U test was used to assess gender differences and the influence of geographic region differences on physical self-perceptions (physical self-worth, physical condition, sport competence, attractive body, physical strength) and global self-esteem. Then a Kruskal-Wallis ANOVA for ranked data was used to assess geographic region influence on boys' and girls' physical self-concept and global self-esteem. The results showed that not only did boys have significantly higher physical self scores (on all scales) and global self-esteem than girls, but also that adolescents from the North of France had higher physical self scores (on all scales) and global self-esteem than adolescents from the South. Moreover, many differences were found between boys and girls on physical self scores (on all scales) and global self-esteem according to their geographic place of residence. The main results showed that girls from the South had lower scores on the attractive body, physical strength, physical self-worth, and global self-esteem scales than all other adolescents, and that boys from the South had lower scores on the attractive body and global self-esteem scales than did boys and girls from the North.

Les objectifs de cette étude exploratoire sont d'évaluer les différences de genre au niveau de concept de Soi physique et l'influence du lieu d'habitation géographique sur le concept de Soi physique d'adolescents, et les différences de genre au niveau du concept de Soi physique. L'inventaire du soi physique a été utilisé afin de mesurer les perceptions du Soi physique et l'estime globale de soi de 323 garçons et 282 filles habitant le Nord ou le Sud de la France. Tout d'abord, un test U de Mann-Whitney a été utilisé pour évaluer les différences sexuelles et les différences selon la région géographique au niveau des perceptions du Soi physique (valeur physique perçue, condition physique, compétences sportives, apparence physique, force) et de l'estime globale de soi. Puis, une ANOVA de Kruskal-Wallis en rang a été utilisée pour évaluer l'influence de la région géographique sur le concept de Soi physique et l'estime globale de soi de garçons et de filles. Les résultats mettent en évidence que les garçons ont des scores d'estime globale de soi et du Soi physique (sur toutes les échelles) supérieurs à ceux des filles; mais aussi que les adolescents du Nord de la France ont des scores du Soi physique (sur toutes les échelles) et d'estime globale de soi supérieurs aux adolescents du Sud. De plus, différentes variations ont été observées entre les garçons et les filles selon leur lieu d'habitation géographique au niveau des échelles d'estime globale de soi et du Soi physique (sur toutes les échelles). Les principaux résultats montrent que les filles du Sud de la France présentent au niveau des échelles d'estime globale de soi, de valeur physique perçue, d'apparence physique et de force des scores inférieurs à ceux des autres adolescents; mais aussi que les garçons du Sud présentent au niveau

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des échelles d'apparence physique et d'estime globale de soi des scores inférieurs à ceux des garçons et des filles du Nord.

Los objetivos de este estudio exploratorio fueron examinar las diferencias de género en el auto-concepto físico, y la influencia del sitio geográfico de residencia, tanto sobre el auto-concepto físico de los adolescentes, como sobre las diferencias de género en el auto-concepto físico. Se empleó el Inventario del Self Físico para medir las auto-percepciones físicas y la auto-estima global. Los participantes fueron 323 varones y 282 mujeres adolescentes que vivían en el Norte y Sur de Francia. Se empleó primeramente la prueba de U de Mann-Whitney para evaluar las diferencias de género y la influencia de las diferencias entre regiones geográficas sobre las percepciones físicas (auto valía física, condición física, competencia en los deportes, cuerpo atractivo, fuerza física) y auto-estima global. Después se usó un ANOVA de Kruskal-Wallis para datos seriados para evaluar la influencia de la región geográfica sobre el auto concepto físico y autoestima global de varones y mujeres. Los resultados mostraron no solamente calificaciones significativamente superiores para los varones respecto a las mujeres en self físico (en todas las escalas) y auto estima global, sino que también los adolescentes del Norte de Francia presentaron calificaciones más altas en self físico (en todas las escalas) y auto estima global que los adolescentes del Sur. Es más, se encontraron diferencias entre varones y mujeres en las calificaciones de self físico (en todas las escalas) y auto estima global de acuerdo con el sitio geográfico de residencia. Los resultados principales mostraron que las adolescentes del Sur presentaban calificaciones más bajas en las escalas de cuerpo atractivo, fuerza física, auto valía física, y auto estima global, en comparación con todos los demás adolescentes, y que los varones del sur presentaban calificaciones más bajas en las escalas de cuerpo atractivo y auto estima global en comparación con los varones y mujeres del Norte.

## INTRODUCTION

The self-concept has been conceived by theorists as a multidimensional construct encompassing many characteristics, competencies, attributes, and roles possessed or played by individuals (Harter, 1996; Marsh, 1997). Self-concept includes many sub-selves or domains, such as the academic self, the family self, the emotional self, the social self, and the physical self (Marsh, 1997). There is substantial evidence that these different components each have their own content and structure (Fox, 1998). For example, the physical self encompasses several aspects of individuals' appearance and physical competence (Fox, 1998). Epstein (1973) and Shavelson, Hubner, and Stanton (1976) hypothesized that these various dimensions of the self are organized hierarchically: The self-concept system is like a pyramid, with global self-concept at the apex and general constructs at the next-lower level (Shavelson et al., 1976). Specificity increases downward, with the most situation-specific self-perceptions at the base (Shavelson et al., 1976). Higher-order levels are dependent on lower-order components (Shavelson et al., 1976). Thus, within-person changes in specific components affect these more general constructs and influence global self-concept (Fox, 1998).

Within such a model, self-esteem is the result of a personal assessment of how one is doing with respect to the constructs that are highly valued and considered important within specific cultures (Coopersmith, 1967; Piers, 1969). Facets

of self-esteem (e.g., judgment of physical abilities) contribute to global self-esteem to the extent that the considered attributes are perceived as important to the sense of self (Fox, 1997). To fully understand self-esteem one must thus consider individuals' internalization of their culture's norms, values, and ideals (Harter, 1999). For instance, if an individual with a high percentage of body fat is exposed to a culture in which body leanness is emphasized, this individual's physical self will most likely be negatively impacted, especially if this individual adheres to such cultural norms. Conversely, if the dominant culture to which he or she adheres elevates family and social relationships above physical appearance and other components of physical self-concept, body fat will have less influence on global self-esteem.

### The physical self

With the recognition of the multidimensionality of the self-concept has come a more detailed study of its various subcomponents (Fox, 1998). The physical self occupies a unique position in the self-system because the body, through its appearance, attributes, and abilities, provides a substantive interface between the individual and the world (Fox, 1998). Appearance is an expression of status and sexuality and provides the major vehicle for social communication (Fox, 1998). Judgments of the physical self thus influence global self-esteem and demonstrate strong correlation with it across the lifespan (Fox, 1997). Although this influence

on global self-esteem is largely explained by ratings of physical appearance and body image, specific physical competencies, such as sport competence and perceived fitness, also appear to play a role in global self-esteem.

About 15 years ago, two hierarchical instruments were developed to assess physical self-perceptions: Fox and Corbin's (1989) *Physical Self-Perception Profile* (PSPP) and Marsh, Richards, Johnson, Roche, and Tremayne's (1994) *Physical Self-Description Questionnaire* (PSDQ). The PSPP, which assesses different levels of physical self-perception, is still the most widely used instrument in physical self-perception research (Stein, 1996). This observation could easily be explained by the strong theoretical basis underlying this instrument. The top of this hierarchical conception of the self is occupied by global self-esteem, and the middle by the physical self-worth domain (i.e., general feelings of happiness, satisfaction, and pride in one's physical self). The bottom is occupied by four subdomains: perception of sport competence (i.e., athletic ability, ability to learn sports, etc.), perception of physical condition and fitness (i.e., stamina, fitness, etc.), perception of an attractive body (i.e., physical attractiveness, ability to maintain an attractive body over time, etc.), and perception of physical strength (i.e., perceived strength, muscle development, etc.).

### **Gender-based and sociocultural differences in physical self-concept**

Numerous studies on adolescents have demonstrated gender-based differences in physical self-concept (Aşç1, 2002; Hayes, Crocker, & Kowalski, 1999; Klomsten, Shaalvik, & Espnes, 2004; Maïano, Ninot, & Bilard, 2004; Marsh, 1998). These studies have consistently reported that girls tend to score lower on generic measures of physical self-perception than boys. This is also the case on more specific measures of perceived physical ability (i.e., sport competence, physical condition, and physical strength scales) and physical appearance (Aşç1, 2002; Hayes et al., 1999; Klomsten et al., 2004; Maïano et al., 2004; Marsh, 1998).

These differences between boys and girls have often been interpreted in the past as innate "sex" differences, referring to the biological fact that boys and girls occupy different bodies (Klomsten et al., 2004). Conversely, researchers in social psychology prefer to explain these differences by invoking the influence of sociocultural context

(Buckworth & Dishman, 2002; Fox, 1998; Sonstroem, 1998). They thus indicate that socio-cultural contexts may impact adolescents' physical self-concepts through various channels of influence: (a) media (i.e., movies, television, magazine, advertisements) that impose ideal body norms, particularly for girls but also for boys (Ricciardelli & McCabe, 2001); (b) gender stereotypes that reflect the belief that girls are weak, helpless, graceful, unathletic, emotional, and passive, and that boys are strong, forceful, dominating, athletic, brave, and competitive (Klomsten et al., 2004); (c) significant others' (family members and peers) appraisals and perceptions (Buckworth & Dishman, 2002; Leary & Baumeister, 2000; Leary & Downs, 1995; Sonstroem, 1998); and (d) social comparison mechanisms that involve observing others and comparing oneself to them (Buckworth & Dishman, 2002; Sonstroem, 1998). This line of research suggests that judgments of physical self may not be solely determined by adolescents' physical characteristics, but may instead reflect socioculturally transmitted context-dependent self-definitions that become internalized through repeated social interactions (Kirk, Singh, & Getz, 2001; Marzano-Parisoli, 2001; Smith, Noll, & Bryant, 1999; Sparkes, 1997; Synnott, 1992; Tiggemann, 2003).

These physical self-perceptions thus develop in a context in which the influences of society and cultural values are strong and do not have intrinsic meaning (Davis, 1997; Fox, 1998; Sparkes, 1997; Synnott, 1993). In this conception, "masculinity" and "femininity" represent sociocultural realities rather than biological ones (Entwistle, 1998; Kirk et al., 2001; Marzano-Parisoli, 2001; Smith, Noll, & Bryant, 1999; Sparkes, 1997; Tiggemann, 2003). Thus, for many boys in Western societies, popularity and social acceptance among peers is associated with an athletic body (i.e., muscular, strong, and skilled), whereas for many girls, popularity and social acceptance among peers is associated with an attractive body (i.e., thin, "big" breasts, thin waist, long slender legs) (Klomsten et al., 2004).

### **OVERVIEW OF THE STUDY**

One criticism of these studies is that, although they have focused on how the sociocultural context might influence gender differences in physical self-concept, they have never taken into account the geographic dimension of this context. Nevertheless, Smith et al. (1999) have suggested that the way adolescents perceive themselves

physically may vary from one geographic region to another within the same country. They have proposed that because each geographic region is associated with distinctive, explicit, and implicit ideas, images, messages, and social representations about the body's appearance, attributes, and abilities (Markus & Kitayama, 1998; Plaut, Markus, & Lachman, 2002). Geographic regions diverge from one another on many dimensions: climate, history, sociopolitical circumstances, economic health, and ethnic background (Markus & Kitayama, 1998). They often have their own ideological landscape and collective meaning space (Plaut et al., 2002). The present exploratory study was specifically designed to answer part of this limitation by comparing the effects of two distinct geographic regions in France (North vs South) on boys' and girls' physical self-concept.

The purpose of this exploratory study was threefold. First, this study sought to examine whether gender differences in physical self-concept still exist and if they still disfavour girls. In line with previous studies, the first hypothesis (H1) states that girls would present more negative physical self-perceptions and global self-esteem than boys.

The second objective was to determine whether geographic place of residence had an influence on adolescents' physical self-concepts. Indeed, the climate of a geographic region might represent a potentially important determinant of adolescents' physical self-perceptions. In the South of France, for example, the Mediterranean climate differs greatly from that of the English Channel coast up North. In the South, the Mediterranean climate is warmer (mean annual temperature: 16°C vs 10°C; mean annual maximal–minimal temperature: 19–11°C vs 13–5°C) and drier (annual number of days with accumulation of rain exceeding 1 litre per square metre: 57 vs 121) than the oceanic climate of the North (Météo France, 1986). Boys and girls from the South may thus spend more time outside wearing lighter clothing (e.g., fitted tee shirts, tank tops, shorts, miniskirts, etc.) than young people from the North. Along the Mediterranean coast, the warmer climate means that adolescents are compelled to exhibit greater portions of their bodies to the critical eye of peers. This greater level of exposure might result in stronger awareness of the cultural stereotypes for male and female beauty and push adolescents to over-invest in their bodies. In this context, as there will always be more attractive and athletically skilled bodies than one's own, negative comparisons of one's own physical skills and appearance with those of others becomes inevitable. Accordingly, the second hypothesis

(H2) posits that adolescents from Southern France would present lower levels of physical self-perceptions and global self-esteem than would adolescents from the North.

Finally, the third objective of this study was to investigate whether gender differences in physical self-concept are influenced by geographic place of residence. The strong Mediterranean stereotypes of ideal beauty would be likely to have a negative effect on girls' physical self-concept and global self-esteem. Thus, the third hypothesis (H3) proposes that girls from the South of France would present lower levels of physical self-perceptions and global self-esteem than all the other adolescents.

## METHOD

### Participants

Two groups of adolescents from different geographic regions of France were invited to participate in this study. The first of these groups comprised 487 adolescents (242 girls and 245 boys) from the Mediterranean coast of France (Cagnes-Sur-Mer and Montpellier; warmer climate). The second group comprised 118 students (40 girls and 78 boys) from the Northern coast of France (Dunkerque and Nanterre; colder climate). All of these adolescents: (a) were aged between 11 and 16 years; (b) were required to participate in physical education classes (these classes were not elective); (c) came from middle-class backgrounds; (d) participated in no physical activities or sports outside of school; (e) participated in the same physical activities and/or sports in their physical education classes; and (f) had never repeated a school year.

### Measures

The French version of Fox and Corbin's (1989) PSPP was used to measure global self-esteem and physical self-perceptions. The original version of this questionnaire is composed of 30 questions, with 6 questions per scale. The Cronbach alpha coefficients range from .81 to .92 for the five scales and test–retest coefficients range from  $r = .81$  to  $.88$  over a 23-day period. The French version, called the *Physical Self Inventory* (PSI), was adapted and validated by Ninot, Delignières, and Fortes (2000). The PSI presents an internal consistency and reliability compatible with the work of Fox and Corbin (1989). The questionnaire comprised six scales, the first of which represents

global self-esteem (GSE, 5 items). This particular scale was adapted from the French version of Coopersmith's (1967) *Self-Esteem Inventory* (SEI—school form) and is made up of a generic 26-item subscale and of three additional 8-item subscales evaluating self-esteem in the social, family, and school areas. The items of the SEI describe typical feelings, reactions, and opinions about various everyday situations experienced by a high-school student. The French version (see Coopersmith, 1984) of the SEI reported satisfactory Cronbach alpha coefficients for the four subscales. They range from .59 (social scale) to .87 (family scale). The next five scales of the PSI were adapted from the PSPP (Fox & Corbin, 1989) and comprise a generic physical self-worth domain (PSW, 5 items) and four subdomains: physical condition (PC, 5 items), sport competence (SC, 4 items), attractive body (AB, 3 items) and physical strength (PS, 3 items). The internal consistency of the six scales of the PSI range from .70 to .90 and the test–retest coefficient ranged from  $r = .90$  to .96 over a 1-month period. Questions are presented as Likert scales with six increasing degrees (That's just like me: 1, *not at all*; 2, *very little*; 3, *some*; 4, *enough*; 5, *a lot*; and 6, *entirely*).

## Procedure

Students from middle and high schools were invited to participate in the study. After school permission to perform the study was granted, the physical education teachers were asked to send informational letters to parents. These letters briefly explained the purpose of the study. Students who agreed to participate, and who returned the informed consent forms from their parents, completed the questionnaires.

Three of the authors and three research assistants visited the schools and administered the questionnaires in November 2002 during physical education classes. To ensure the standardization of the administration procedures, each evaluator followed the same set of previously agreed-upon written instructions. The students were informed that the questionnaire was not a test and that there were no right or wrong answers. They were told that they could stop participating in the study at any time and were assured that their answers would remain confidential. They were not allowed to speak while completing the questionnaire, except to ask for help from the researcher if they did not understand the questions. Because of differences in reading and writing skills, students were allowed to complete the questionnaire at their

own pace. For those who wanted assistance, the questions were read aloud by the researcher.

## Data analysis

First a Shapiro-Wilk test was used to investigate the normality of the data. The results showed that none of the data were normally distributed. Next, Spearman correlations between the various scales of the PSI in the different subgroups of subjects were computed to evaluate whether these variables did indeed reflect subscales from a greater construct and whether this construct applied equally to these various subgroups.

Because physical self-perceptions and global self-esteem scores were not normally distributed, the first hypothesis (H1) was evaluated with a Mann-Whitney U (MWU) test in order to compare the ranked sums of each of the six PSI scales between the two groups (boys and girls). The  $p$  value was set at  $< .05$  to indicate a significant difference between groups. To evaluate the second hypothesis (H2), a similar procedure was used to compare the ranked sums of each of the six PSI scales between adolescents from the North and South of France.

To evaluate the third hypothesis (H3), a Kruskal-Wallis (KW) ANOVA (with fixed factors for gender and geographic area) for ranked data was used. This nonparametric test indicated only whether significant differences existed between the four groups ( $p < .05$ ), not the specific differences between them. In order to identify pairs of interest, a post hoc Multiple Comparisons of Mean Ranks (MCMR) of all pairs of groups was used, following Siegel and Castellan's (1988) suggestion.

Finally, an additional post hoc set of analyses was used to evaluate the transferability of Fox and Corbin's (1989) hierarchical model of the self. This model proposes that the various scales of adolescents' physical self-concept are hierarchically related to their global self-esteem, which occupies the apex of the self-concept pyramid. Consequently, physical self-concept scales should represent significant predictors of adolescents' global self-esteem. To evaluate the transferability of this model to different groups of adolescents (boys, girls, north, south, and combinations), multivariate regression analyses in which physical self-concept scales were used to predict global self-esteem in each potential subgroup of subjects were realized. Because the physical self-perception and global self-esteem scores were not normally distributed, each of these variables had to be logarithmically transformed for these analyses.

**RESULTS**

The correlations between all physical self-perception scales and global self-esteem in the various subgroups of subjects are reported in Tables 1 and 2. The results from these analyses clearly indicated that, with very few exceptions, correlations were significant and positive for subjects across subgroups.

The means and standard deviations for each scale for boys and girls, as well as the results of the MWU tests, are reported in Table 3. The MWU tests revealed significantly lower means in girls than boys in all physical self scales, as well as on global self-esteem (see Figure 1).

In order to assess the main effect of geographic region across the six scales of the PSI, the MWU test was used. The results from this analysis, as well as the means and standard deviations for each scale for adolescents from the North and South of France, are reported in Table 4. These results

**TABLE 1**  
Spearman *r* correlation coefficients among PSI scales for boys and girls, and North and South regions

	<i>GSE</i>	<i>PSW</i>	<i>PC</i>	<i>SC</i>	<i>AB</i>	<i>PS</i>
<b>Boys</b>						
GSE	1.00					
PSW	.46*	1.00				
PC	.44*	.55*	1.00			
SC	.35*	.69*	.57*	1.00		
AB	.57*	.49*	.50*	.40*	1.00	
PS	.25*	.56*	.41*	.57*	.31*	1.00
<b>Girls</b>						
GSE	1.00					
PSW	.45*	1.00				
PC	.25*	.40*	1.00			
SC	.19*	.69*	.44*	1.00		
AB	.58*	.46*	.27*	.24*	1.00	
PS	.20*	.51*	.39*	.65*	.28*	1.00
<b>North</b>						
GSE	1.00					
PSW	.51*	1.00				
PC	.30*	.50*	1.00			
SC	.24*	.61*	.60*	1.00		
AB	.45*	.49*	.44*	.29*	1.00	
PS	.04	.46*	.36*	.56*	.14	1.00
<b>South</b>						
GSE	1.00					
PSW	.42*	1.00				
PC	.35*	.54*	1.00			
SC	.26*	.73*	.55*	1.00		
AB	.56*	.48*	.38*	.35*	1.00	
PS	.27*	.60*	.49*	.68*	.33*	1.00

GSE: global self-esteem; PSW: physical self-worth; PC: physical condition; SC: sport competence; AB: attractive body; PS: physical strength.  
\* *p* < .00001.

**TABLE 2**

Spearman *r* correlation coefficients among PSI scales for boys and girls from the North and South

	<i>GSE</i>	<i>PSW</i>	<i>PC</i>	<i>SC</i>	<i>AB</i>	<i>PS</i>
<b>Girls North</b>						
GSE	1.00					
PSW	.57*	1.00				
PC	.37*	.63*	1.00			
SC	.21	.76*	.70*	1.00		
AB	.62*	.49*	.36*	.25*	1.00	
PS	.17	.53*	.54*	.70*	.28*	1.00
<b>Girls South</b>						
GSE	1.00					
PSW	.37*	1.00				
PC	.23*	.36*	1.00			
SC	.13*	.67*	.38*	1.00		
AB	.53*	.43*	.23*	.22*	1.00	
PS	.18*	.50*	.35*	.65*	.25*	1.00
<b>Boys North</b>						
GSE	1.00					
PSW	.50*	1.00				
PC	.38*	.45*	1.00			
SC	.38*	.58*	.47*	1.00		
AB	.38*	.49*	.54*	.35*	1.00	
PS	.04	.43*	.20	.40*	.05	1.00
<b>Boys South</b>						
GSE	1.00					
PSW	.44*	1.00				
PC	.43*	.57*	1.00			
SC	.31*	.71*	.55*	1.00		
AB	.59*	.50*	.38*	.41*	1.00	
PS	.30*	.60*	.49*	.61*	.37*	1.00

GSE: global self-esteem; PSW: physical self-worth; PC: physical condition; SC: sport competence; AB: attractive body; PS: physical strength.

\* *p* < .00001.

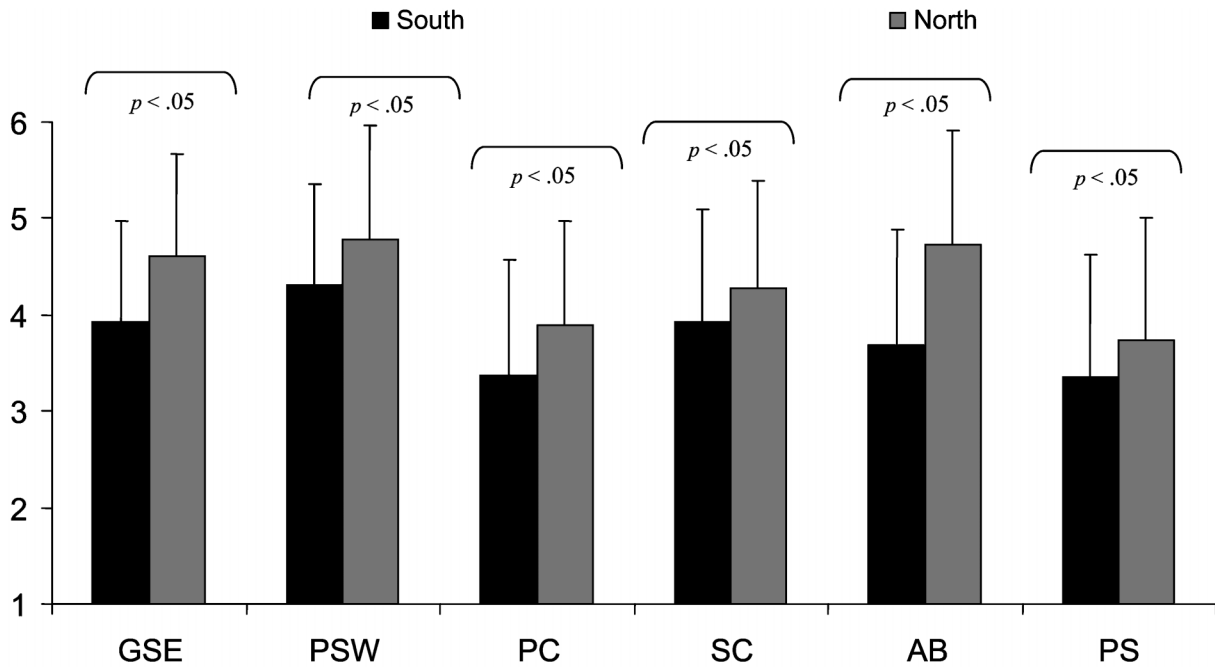
showed that geographic region was significantly related to all domains. Adolescents from the South presented significantly lower scores than adolescents from the North in all physical self scales, as well as on global self-esteem (see Figure 2).

A KW ANOVA was used to assess the effect of geographic region on boys' and girls' physical self-concept (H3). This analysis revealed differences

**TABLE 3**  
Means and standard deviations for boys and girls

<i>Scales</i>	<i>Boys</i> ( <i>n</i> =323)		<i>Girls</i> ( <i>n</i> =282)		<i>U</i>
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	
Global self-esteem	4.16	1.04	3.94	1.05	40132*
Physical self-worth	4.73	1.04	4.04	1.18	29883**
Physical condition	3.90	1.20	2.99	1.09	26356**
Sport competence	4.42	1.15	3.52	1.13	26119**
Attractive body	4.08	1.20	3.67	1.20	37048**
Physical strength	3.92	1.27	2.87	1.26	25267**

\* *p* < .01; \*\* *p* < .00001.



**Figure 1.** Means (bar) and standard deviations (line) obtained for the various PSI scales according to gender (minimum and maximum scores are 1 and 6, respectively). GSE: global self-esteem; PSW: physical self-worth; PC: physical condition; SC: sport competence; AB: attractive body; PS: physical strength.

**TABLE 4**  
Means and standard deviations for the North and South

Scales	North (n=118)		South (n=487)		U
	Mean	SD	Mean	SD	
Global self-esteem	4.61	1.03	3.93	1.01	17867**
Physical self-worth	4.78	1.04	4.32	1.17	21962**
Physical condition	3.88	1.26	3.37	1.21	22411**
Sport competence	4.27	1.22	3.93	1.22	23492**
Attractive body	4.72	1.01	3.69	1.17	14504**
Physical strength	3.74	1.29	3.35	1.38	23874*

\*  $p < .001$ ; \*\*  $p < .00001$ .

between the four groups across all physical self scales and global self-esteem. A MCMR post hoc test was then used to compare pairs of interest. The results from these analyses are reported in Table 5. These results showed not only that girls from the South presented lower scores for the global self-esteem scale than girls and boys from the North and boys from the South ( $p < .05$ ), but also that boys from the South presented lower scores than girls and boys from the North on this same variable ( $p < .05$ ). Concerning the physical self-worth scale, the results showed that girls from the South had lower scores than girls and boys from the North and boys from the South ( $p < .05$ ).

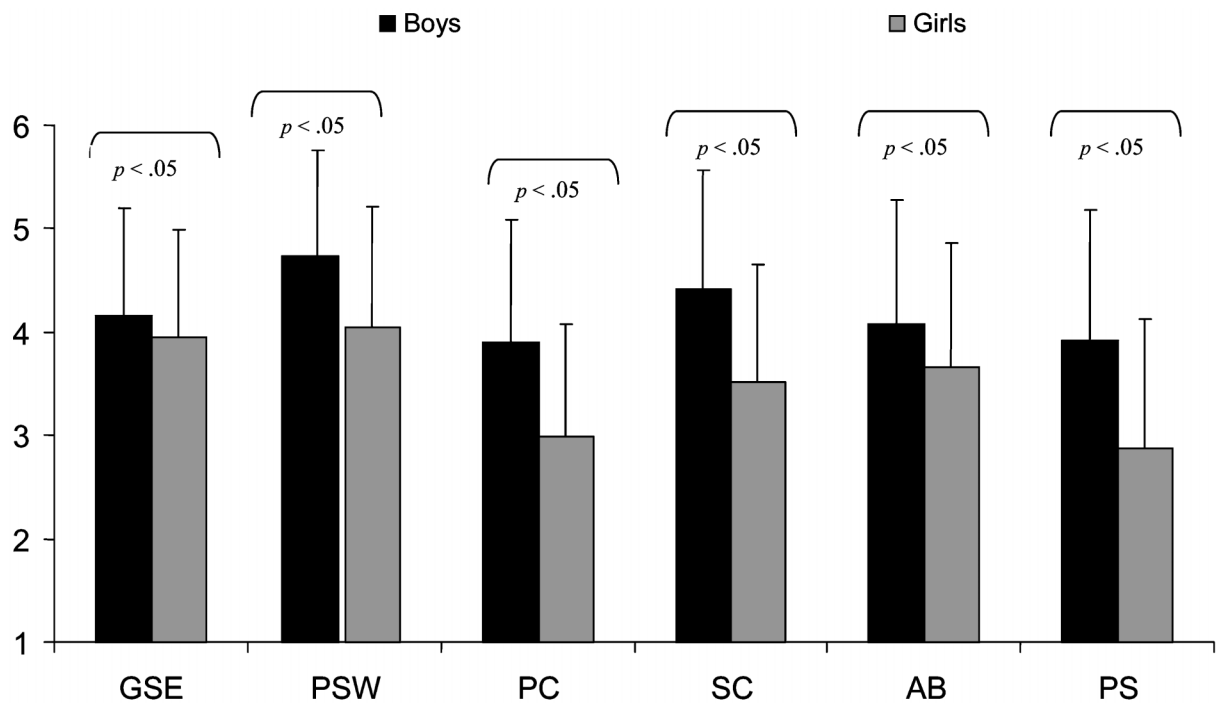
**TABLE 5**  
Results from the KW ANOVA and MCMR post hoc tests

Scales	Girls South (n=242)		Girls North (n=40)		Boys South (n=245)		Boys North (n=78)		H	Post hoc (.05)
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
GSE	3.80	0.97	4.82	1.10	4.06	1.04	4.50	0.98	50.35*	1<4; 4>3; 3>1; 2>3; 2>1
PSW	3.93	1.16	4.68	1.13	4.70	1.05	4.83	0.99	69.54*	1<4; 3>1; 2>1
PC	2.92	1.05	3.40	1.23	3.82	1.18	4.13	1.22	87.31*	1<4; 2<4; 4>3; 4>1; 2<3
SC	3.49	1.11	3.69	1.25	4.37	1.17	4.56	1.10	86.25*	1<4; 2<4; 4>3; 3>1; 2<3
AB	3.51	1.13	4.63	1.17	3.86	1.19	4.76	0.93	79.21*	1<4; 4>3; 3>1; 2>3; 2>1
PS	2.80	1.23	3.27	1.34	3.90	1.30	3.99	1.19	94.24*	1<4; 2<4; 3>1; 2<3; 2>1

GSE: global self-esteem; PSW: physical self-worth; PC: physical condition; SC: sport competence; AB: attractive body; PS: physical strength.

1 < > 2 < > 3 < > 4: Girls South (1) vs Girls North (2) vs Boys South (3) vs Boys North (4).

\*  $p < .0001$ .



**Figure 2.** Means (bar) and standard deviations (line) obtained for the various PSI scales according to geographic region type (minimum and maximum scores are 1 and 6, respectively). GSE: global self-esteem; PSW: physical self-worth; PC: physical condition; AB: attractive body; PS: physical strength.

The results also showed that girls from the North and South scored lower than boys from the North and South ( $p < .05$ ) on the physical condition and sport competence scales. Additionally, girls from the south also scored lower than girls and boys from the north and boys from the South ( $p < .05$ ) on the body appearance scale, but boys from the South scored lower than girls and boys from the North on this same scale ( $p < .05$ ). Finally, the results revealed that girls from the North and South scored lower than boys from the North and South ( $p < .05$ ) on the physical strength scale, and that girls from the South scored lower than girls from the North.

To ascertain the effects of the various physical self-perception scales on global self-esteem, multiple regressions were used to predict global self-esteem scores from physical self-concept scales separately for boys and girls and for adolescents from Northern and Southern France. The results from these analyses are reported in Table 6. For boys, 38% of the variance in global self-esteem was explained by three predictors: physical self-worth, attractive body, and physical condition. For girls, physical self-worth, attractive body, and sport competence explained 40% of the variance in global self-esteem. For Southern adolescents, 38% of the variance in global self-esteem was explained by four predictors: physical self-worth, physical condition,

**TABLE 6**

Standardized beta values for PSI scales in predicting global self-esteem for boys and girls, and North and South regions

Predictors	$\beta$ values			
	Boys	Girls	South	North
Physical self-worth	.24*	.32*	.26*	.44*
Physical condition	.14*	.08	.12	.04
Sport competence	-.05	-.15*	.15*	.03
Attractive body	.41*	.46*	.46*	.23*
Physical strength	-.03	-.03	-.01	.03
$R^2$	.38	.40	.38	.31

\*  $p < .001$ .

sport competence, and attractive body. For Northern adolescents, physical self-worth and attractive body explained 31% of the variance in global self-esteem.

Additional regression analyses were also realized in each of the four distinct subgroups of adolescents and are reported in Table 7. For boys from the South, 41% of the variance in global self-esteem was explained by two predictors: physical self-worth and attractive body. For boys from the North, 28% of the variance was explained solely by physical self-worth. Amongst northern girls, physical self-worth and attractive body together explained 49% of the variance in global



TABLE 7

Standardized beta values for PSI scales in predicting global self-esteem for boys and girls across geographic regions

Predictors	$\beta$ values			
	Boys		Girls	
	South	North	South	North
Physical self-worth	.25*	.30*	.27*	.58*
Physical condition	.15	.14	.08	.02
Sport competence	-.14	.21	-.14	.12
Attractive body	.46*	.08	.43*	.38*
Physical strength	.002	.18	.001	.18
$R^2$	.41	.28	.49	.33

\*  $p < .001$ .

self-esteem. Finally, 33% of the variance of Southern girls' global self-esteem was explained by physical self-worth and attractive body.

## DISCUSSION

This exploratory study investigated gender differences in physical self-concept, and the influence of geographic region on both adolescents' physical self-concept and gender differences in physical self-concept.

The results on gender differences confirmed the first hypothesis (H1), as well as previous findings that boys present a more positive physical self-concept (Aşç1, 2002; Hayes, et al., 1999; Klomsten et al., 2004; Maïano et al., 2004; Marsh, 1998). Not only did boys score higher in global physical self-perception (i.e., physical self-worth scale), but they also scored significantly higher than girls in all subdomains (i.e., physical condition, sport competence, attractive body, and physical strength), and in global self-esteem. These results support previous observations (Hoyt & Kogan, 2001; Rosenblum & Lewis, 1999) that girls are dissatisfied with and particularly critical of their bodies, and especially with their physical appearance (i.e., attractive body scale) and physical ability (i.e., physical condition, sport competence, and physical strength scales). The multiple regression analysis indicated that the low scores on the physical appearance scale strongly predicted their low level of global self-esteem (i.e., attractive body scale). Their global self-esteem was thus strongly dependent on how they perceived their physical appearance (Harter, 1996). This result suggests that adolescent girls' more negative physical self-perceptions and global self-esteem could reflect difficulties in coping with the ideal female body norms that are far too often communicated by Western societies. These norms

of a perfect tube-like body silhouette are unobtainable for most adolescent girls because of the drastic changes they encounter during puberty (Dorian & Garfinkel, 2002; Lamb, Jackson, Cassiday, & Priest, 1993; Low et al., 2003; Murnen, Smolak, Mills, & Good, 2003; Sands & Wardle, 2003; Stanford & McCabe, 2002). Conversely, boys' demonstration of a high level of global and specific physical self-concept could be linked to the greater accessibility (e.g., realism, attainability) of the ideal male body norms or the more limited perceptibility of these norms (Low et al., 2003; Murnen et al., 2003). It is still interesting to note that self-perceived body attractiveness remains a very strong predictor of males' and females' global self-esteem.

The results further illustrated that adolescents from the South of France scored lower than those from the North in physical self-concept, thus confirming the second hypothesis (H2). The adolescents living in the South presented lower scores for global physical self-concept (i.e., physical self-worth scale), but also for all subdomains and global self-esteem. The geographic region differences in physical self-perceptions and global self-esteem were largely consistent with the prediction that regional variations in climatic conditions influence body exposition and therefore represent potentially important determinants of adolescents' physical self-perceptions. Indeed, these results suggest that the adolescents from the South of France could expect more of their bodies than their Northern counterparts. They appeared particularly dissatisfied with their bodies and especially with their physical appearance (i.e., attractive body scale) and physical ability (i.e., physical condition, sport competence, and physical strength scales). Multiple regression analyses further indicated that physical appearance (i.e., attractive body scale) represented a strong predictor of their global self-esteem. This result lends strong support to the possibility that the greater physical exposure of Southern France makes the ideal body norms more forceful in effect. In fact, although physical attractiveness also represented a significant predictor of global self-esteem in the North, the strength of this relationship was greatly enhanced in the South.

Finally, the results for the geographic region effects on gender differences in physical self-perceptions and global self-esteem showed the following: girls from the South of France had lower scores than all other adolescents on global self-esteem, physical self-worth, attractive body, and physical strength scales, and boys from the South of France had lower scores than girls and boys from the North on the global self-esteem and

attractive body scales. These findings partially confirmed the third hypothesis (H3) and indicated that the gender differences that disfavour girls in physical self-concept are strongly influenced by the geographic place of residence. In fact, gender differences that disfavour girls still exist in the South, but it is interesting to note that there was practically no difference in scores between the boys and girls from the North. This result suggests that the observed gender differences in self-concept could be either emphasized or attenuated according to the geographic region in which adolescents live. It may thus be hypothesized that girls from Southern France may be more dissatisfied with their body image because, in this warmer climate, they might find it more difficult to escape from the impact of the cultural ideals of beauty. According to the multiple regression analysis, it was southern girls' physical appearance scores that most strongly predicted their global self-esteem.

Interestingly, living in Southern France also appeared to be associated with lower levels of physical appearance and global self-esteem among boys. Multiple regression analysis revealed that for these boys, as for their female counterparts, scores on the physical appearance scale strongly predicted their level of global self-esteem.

### IMPLICATIONS FOR PRACTICE

This research is of practical interest to psychologists and physical education teachers concerned with adolescents' physical self-concepts and global self-esteem. As shown in the results, boys and girls living in the South of France scored significantly lower on physical appearance and global self-esteem than boys and girls from the North. Moreover, Southern adolescents' greater internalization of the societal thinness ideals may be directly implicated in these findings.

From a public health perspective, this self-depreciation is problematic and warrants some special recommendations. In fact, if low global self-esteem and perceived physical appearance continue throughout adolescence, French adolescents from the South may be at greater risk of developing eating disorders, as has been underlined in numerous studies (Button, Sonuga-Barke, Davies, & Thompson, 1996; Cervera et al., 2003; Gual et al., 2002; Hill & Pallin, 1998; Lawrence & Thelen, 1995; Whichström, 1995). Steps should be taken before this problem develops in frequency and severity. It is of the utmost importance to detect adolescents presenting negative

self-concepts as soon as possible, both to provide help and to prevent the development of more serious eating disorders. Both psychologists and physical education teachers occupy privileged positions to help these adolescents. For example, psychologists could be instrumental in raising awareness among adolescents that the norms for physical attractiveness are unrealistic and inaccessible. Physical education teachers could help these adolescents to attach less importance to physical appearance to the benefit of other physical self-perceptions, such as physical condition, sport competence, and physical strength. This could be accomplished by providing more exposure to sports that de-emphasize the aesthetic dimension, such as technical sports (e.g., high jump, long jump, hurdling), team sports (e.g., basketball, handball, field hockey, volleyball, etc.), and power sports (e.g., discuss, javelin, sprinting, etc.).

### CONCLUSION AND FUTURE DIRECTIONS

In conclusion, this exploratory study shows that geographic region has a strong influence on the gender differences in physical self-perceptions and global self-esteem. Future research on boys' and girls' physical self-perceptions and global self-esteem should thus take into consideration that geographic place of residence is an influential variable.

There are several possible explanations why adolescents from Southern France, and more specifically girls, score lower on physical self-perceptions and global self-esteem than their counterparts from the North. One argument developed in this article is that the climate of a geographic region, probably mediated by skin exposure, can exert a major influence on boys' and girls' physical self-perceptions and internalization of society's thinness ideals.

Future studies should therefore: (a) confirm these results with a bigger sample of boys and girls from both geographic regions; (b) examine more precisely the characteristics of each adolescent according to geographic place of residence (e.g., practices of schooling, religion, socioeconomic status, leisure time, family status, body mass index, thin-ideals internalization, etc.); and (c) investigate how each geographic region influences gender differences (e.g., media, gender stereotypes, appraisals by significant others, social comparison mechanisms, etc.).

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