Revista Mexicana de Trastornos Alimentarios (2016) xxx, xxx–xxx

REVISTA MEXICANA DE TRASTORNOS ALIMENTARIOS
MEXICAN JOURNAL OF EATING DISORDERS
http://journals.iztacala.unam.mx/index.php/amta/

EMPIRICAL

Body size estimation: Discrimination of subtle differences in male and female body parts

Diana Alejandra González-García, Laura Acuña*

Laboratorio de Condicionamiento Operante, Facultad de Psicología, Universidad Nacional Autónoma de México, Ciudad de México, Mexico

Received 8 April 2016; accepted 19 August 2016

KEYWORDS
Visual perception;
Body image;
Body-size estimation;
Discrimination ability;
Weber fractions

Abstract The study determined the sensitivity of adults to detect subtle differences in male and female body parts (face, arms, chest, waist, hips, thighs and calves). A total of 202 adults (84 men and 118 women) with a mean age of 34.9 years adjusted the size of each part of a comparison silhouette until it matched that of a sample silhouette. The sensitivity to detect subtle differences was greater for the male than for the female silhouette (mean Weber Fractions, *WF* = .032, .036, respectively). The greatest sensitivity for both silhouettes was in the waist and hips (*WF* = .019 in both cases) and the smallest in the arms and face (*WF* = .048, .049, respectively). Men, young participants and those with high education (*WF* between .017 and .043) detected subtle differences to a greater degree than their counterparts (*WF* between .019 and .053). According to the environmental approach of social psychology, the latter suggests that members of those subgroups have been subjected to more social pressures to sharpen their discrimination of small differences in the body shape of their conspecifics. This study adds evidence to previous knowledge about how cultural variables shape visual perception.

PALABRAS CLAVE
Percepción visual;
Imagen corporal;
Estimación del tamaño corporal;
Habilidad discriminativa;
Fracciones de Weber

Estimación del tamaño corporal: discriminación de diferencias sutiles en partes corporales de hombres y mujeres

Resumen Se determinó la sensibilidad de adultos para detectar diferencias pequeñas en partes del cuerpo masculino y femenino (cara, brazos, pecho, cintura, cadera, muslos y pantorrillas). Participaron 202 adultos (84 hombres, 118 mujeres) con edad promedio de 34.9 años, quienes ajustaron el tamaño de cada parte de una silueta de comparación, hasta igualarlo con el de una silueta muestra. La sensibilidad para detectar diferencias pequeñas fue mayor para la silueta masculina que para la femenina (fracciones medias de Weber, *FW* = 0.032, 0.036,

* Corresponding author.
E-mail address: lacuna@unam.mx (L. Acuña).
Peer Review under the responsibility of Universidad Nacional Autónoma de México.

http://dx.doi.org/10.1016/j.rmta.2016.08.002

Please cite this article in press as: González-García, D. A., & Acuña, L. Body size estimation: Discrimination of subtle differences in male and female body parts. *Revista Mexicana de Trastornos Alimentarios* (2016), http://dx.doi.org/10.1016/j.rmta.2016.08.002

respectivamente). La mayor sensibilidad fue para la cintura y la cadera de ambas siluetas (*FW* = 0.019 en ambos casos) y la menor para los brazos y la cara (*FW* = 0.048, 0.049, respectivamente). Los hombres, los jóvenes y aquellos con educación universitaria (*FW* entre 0.017 y 0.043) fueron más sensibles para discriminar diferencias que sus contrapartes (*FW* entre 0.019 y 0.053). De acuerdo con el enfoque ambientalista de la psicología social, esos subgrupos han estado sujetos a mayores presiones sociales para afinar su discriminación de diferencias en la forma del cuerpo de sus conespecíficos. Este estudio añade evidencia al conocimiento existente sobre cómo las variables culturales moldean la percepción corporal.

Introduction

The ability to discriminate subtle differences between stimuli could vary little among the members of the same social group but considerably across different groups. For example, musicians distinguish more tone-frequencies than non-musicians (Kishon-Rabin, Amir, Vexler, & Zaltz, 2001). Russian speakers discriminate between similar tones of blue with greater precision than English speakers, due to the two terms for light and dark blues in the Russian language versus only one term for all kinds of blues in English (Winawer et al., 2007).

Although the precision to discriminate small differences between stimuli is limited by a person's sensory capabilities, the reinforcing value of the stimuli might also affect its discrimination. For example, Lambert, Solomon, and Watson (1949) found that children estimated correctly the size of a token, but after it was established as a conditioned reinforcer they overestimated its size. Unwritten cultural norms might also determine the reinforcement value of a stimulus. Numerous studies have shown that social stimuli shape how people perceive their environment (see Balcetis & Lassiter, 2010). For example, Segall, Campbell, and Herskovits (1966) compared the perception of optical illusions by western and non-western people, finding that the latter were not susceptible to the illusions. They concluded that visual stimuli discrimination is culturally determined. Nisbett and Masuda (2003) asked Japanese and Americans to identify animals that appeared in a specific context. When the context changed, Japanese failed to identify the animals seen before. These results along with those from other studies (Masuda, 2009; Nisbett & Miyamoto, 2005) showed that people from Asian cultures perceive images as a whole, while people from western cultures focus their attention in particular stimuli, while disregarding the context. Thus, the unwritten cultural norms demand different degrees of precision to selectively discriminate between certain properties of the environmental stimuli (cf. Duffy & Kitayama, 2010). One area in which the unwritten cultural norms might determine the discrimination of subtle differences between stimuli by people of different social subgroups is the estimation of body size based on visual cues.

Nowadays, western cultural norms favor thin bodies (Swami et al., 2010). Women, the young, high-income and high-educated people are under more social pressures to adhere to the ideal body size than their counterparts (McCabe & Ricciardelli, 2003; O'Dea, 2008; Pruis & Janowsky, 2010). Thin bodies however are not universally appreciated. Even within the western cultures the social precepts of some subgroups (i.e., African–Americans) favor heavier bodies than other subgroups (i.e., Caucasians; Befort, Thomas, Daley, Rhode, & Ahluwalia, 2008; Miller et al., 2000). Some subgroups from non-western countries (mainly people with low-income) also favor heavier bodies than people from the same cultures that adhere to western standards (Swami et al., 2010). These findings suggest that people of different sex, age and educational level are exposed to specific social demands that might influence their ability to discriminate subtle differences between body sizes.

Although there are numerous studies in psychology on the estimation of people's own body size (see Farrell, Lee, & Shafran, 2005, for a review) there are few reports on the estimation of the body size of other people, especially during the last five to ten years. The main purpose of previous studies that determined how people estimate other people's body size was to find out how people with an eating disorder or with obesity estimated their own body size compared with normal-body-size people (Farrell, Shafran, & Fairburn, 2003; Gardner, Martínez, & Espinoza, 1987; Hundleby, Misumi, Kampen, & Keating, 1993; Sand, Lask, Høie, & Stormark, 2011; Szymanski & Seime, 1997; Whitehouse, Freeman, & Annandale, 1986). The estimation of other people's body size was only included as a control to determine the similarities or differences between both estimations (own and others). Since eating disorders are more frequent amongst women, participants in most of the studies were exclusively undergraduate women with an age range from 21 to 31.5 years (Farrell et al., 2003; Hundleby et al., 1993; Szymanski & Seime, 1997; Whitehouse et al., 1986). The total sample of women included in the studies varied from 40 to 79. Participants in the Gardner et al. (1987) study were 19 men and 19 women, half with obesity and half with normal weight. The authors did not specify the age of the participants. In the Sand et al. (2011) study participants were 406 Norwegian adolescents (59% girls; mean average age 13.7 years) with and without risk of developing an eating disorder.

In all of the studies mentioned above, a variant of the psychophysical method of adjustment was used to determine how people estimate the body size of others. That is, participants were asked to adjust the size of a sample stimulus until it matched that of a comparison stimulus. Although

Please cite this article in press as: González-García, D. A., & Acuña, L. Body size estimation: Discrimination of subtle differences in male and female body parts. *Revista Mexicana de Trastornos Alimentarios* (2016), http://dx.doi.org/10.1016/j.rmta.2016.08.002