The effect of overweight stereotype threat on children's motor learning*

Maryam Rabeinia, Esmaeel Saemi, and Rasool Abedanzadeh

Faculty of Sport Sciences, Shahid Chamran University of Ahvaz, Ahvaz, Iran

The purpose of the present study was to investigate the effect of overweight stereotype threat on children's motor learning. Twenty-four children (Mage = 9.25 ± 0.53 years) were conveniently selected and randomly assigned into two groups of stereotype threat (with emphasis on individual characteristics, namely, overweight) and control group. The task consisted of maintaining the balance on the stabilometer during 30-second trials. One trial in the pre-test, 10 trials in the acquisition phase and 5 trials in the retention test were run. The findings revealed lower motor learning among the overweight stereotype group compared to the control group. Therefore, it is suggested that in similar situations, coaches can reduce stereotype threat emphasizing on the ineffectiveness of individual characteristics, i.e., overweight on motor performance of children thereby prevent performance and learning disruptions.

Keywords: balance, overweight, stereotype threat, children

Highlights:

- Balance performance in children was lower in overweight stereotype threat.
- Overweight stereotype threat conditions had a negative effect on motor learning as well as performance among children.
- It is suggested that educators and practitioners decrease the stereotype threat by emphasizing the ineffectiveness of individual characteristics such as being overweight on performance and thereby prevent the destruction of children's performance and learning.

Corresponding author: e.saemi@scu.ac.ir

One of the concerns that families face in recent decades is the prevalence of obesity and overweight among children (Rosa et al., 2019). According to the World Health Organization, in 2016, the prevalence was 18% in girls and 19% in boys (WHO, 2018). Overweight and childhood obesity can lead to some physical diseases such as type two diabetes as well as cardiovascular problems (Friedman et al., 2007). Anyway, these children can also experience some psychological problems such as body image disorder due to being overweight (Harrier & Thomson, 2012). Body image is defined as an individual mental assessment of a person's appearance (Thomson et al., 1999). People with body image disorders are often dissatisfied with their body shape and weight (Smolak & Thomson, 2009). These body image disorders are associated with some eating disorders (Steiner et al., 2006), self-esteem and also depression problems (Heinberg & Thomson, 2009). The body image disorder is also associated with some other cognitive-emotional-social variables.

One of these cognitive-emotional-social variables is the stereotype threat. Research has shown that stereotype conditions can also impact academic performance and motor skills as well (Chalabave et al., 1997). Stereotypes are defined as beliefs that link a group of people to a particular trait (Inzlicht & Schmader, 2012). In other words, Stereotype threat is a social psychological phenomenon that arises when a person is aware of the negative stereotypes of the social group to which s/he belongs, and is concerned about negative judgments about these stereotypes (Spencer et al., 2016). According to the above definition, stereotypes consist of two parts; first a group with particular features (e.g., East Africa), and a group with salient performance results (for example being good at marathon race) which are linked with generalization among group members and disregarded for their individual differences (Inzlicht & Schmader, 2012).

Numerous studies have shown the negative effects of stereotype threat on various areas of human behavior (Shapiro & Neuberg, 2007; Miller, 2019), for instance, memory-related performance (Chasteen et al., 2005), scientific and academic contexts (Schmader, 2002), and motor behavior (Beilock & McConnell, 2004). These effects are commonly observed among traditional populations such as race stereotype in the African – American race (Steele & Aronson, 1995), gender stereotype in women (Chalabave et al., 2008), and age stereotype in the elderly (Chasteen et al., 2005). In addition, sometimes they are not common among stereotype people. For example, the studies have shown that in a math test, when women are told that the test determines the gender differences, their test performance become weaker than that of women compared to the situations where they are told that the test has nothing to do with gender differences (Spencer et al., 1999). Although research on the effects of stereotype threat has been considered on academic and motor skills performance, there are a few studies on learning and motor performance, especially among children (Cardozo & Chiviacowsky, 2015).

Overweight people (mostly with a BMI above 25) are one of the groups at risk of stereotype threat (Chalabaev & Sarrazin, 2020). Overweight stereotypes are mostly negative. Overweight and obese people always consider themselves to

be lazy, weak, and even ugly, stupid, and low self-confident individuals (Puhl & Brownell, 2003). These negative beliefs seem to originate from the surrounding societal discourse. Trying to participate in a physical activity and lead an active lifestyle seems to reduce these negative effects (Rukavina & Li, 2011). However, anti-obesity attitudes can be detrimental mainly due to the prevalence of discriminatory behaviors, especially in sports environments where people's bodies are mainly exposed to others (Rukavina & Li, 2008). Research has shown that overweight children are often called out by their nicknames referring to their weight, so these children try to appear less in sports and social situations (Hayden-Wade et al., 2005).

There are many stereotypes about overweight people and they may cause physical and psychological risks (Puhl & Heuer, 2009). Findings by Friedman et al. (2005) showed that internalizing negative cultural beliefs about weight was a predictor of psychological problems such as depression, self-esteem, and issues related to body image and general psychiatric symptoms. Individuals who perceive themselves as overweight, or have a negative body image, may be susceptible to weight stigma (Schmalz, 2010). For instance, research has revealed that when overweight people are exposed to stereotype threat, their exercise intentions, eating habits, and perceived skills to accomplish exercise have been affected, therefore, they potentially reduce the activity level of their body (Vartanian & Shaprow, 2008).

There are various theories accounting for the negative effects of stereotype threat, for example, the explicit monitoring hypothesis (Beilock & Carr, 2001). According to this hypothesis, performance degradation in a motor skill is described as an increase in working memory due to the involvement in unnecessary cognitive control processes of an automatic movement. This conscious control may lead to impaired performance and motor function, especially in stressful situations (Baumeister, 1984; Beilocket al., 2002). In a stereotype threat condition, focus on specific components of the movement consciously will put more pressure on one's working memory resulting in decreased motor performance (Deshayes et al., 2019). However, other theories such as the emotional-based approaches (Drace et al., 2019) have also partially described these negative effects.

To date, only a few studies have examined the impact of stereotype threat on motor learning. For example, Wulf, Chiviacowsky, and Lewthwaite (2012) found that increasing the beliefs of older people in their abilities by increasing their expectations for enhanced performance and hope would be useful for learning a balance task even if the age-related stereotype was not explicitly manipulated. In another study, Heidric and Chiviacowsky (2015) showed that gender stereotype threat could directly affect their training in sport skills and their self-efficacy. However, the few studies that we found in the field of motor learning have mainly analyzed the effects of stereotypes such as gender and age while other stereotypes like overweight have received less attention. For example, Cardozo and Chiviacowsky (2015) showed that threats of overweight stereotypes can negatively impact adult motor learning. However, the effects of stereotype threat among children age-group has not taken into account.

Major research on stereotype threat in the field of movement has only examined the temporary effects of stereotype threat in the form of motor performance whereas little attention is given to the permanent effects of motor learning. So, one of the goals of the present study is to investigate the permanent effects in the retention test. On the other hand, due to the different cognitive and motor mechanisms of children compared to adults, the present study seeks to answer the question whether overweight stereotype threat can affect children's performance and motor learning?

Method

The present study was a quasi-experimental study that was conducted during two days and in different stages of pre-test, acquisition, and retention. According to similar studies, the adequate sample size for the present study was considered, so 24 participants were recruited for this study (all females, mean age 9.25±.53) (Heidrich & Chiviacowsky, 2015). Participants were recruited from a local elementary school in Ahvaz, Iran and then were randomly assigned into two groups of overweight stereotype threat and control group. The criteria for entering the research include: 1. Having an age range of 7 to 10 years old; 2. Having full health; 3. Not having any balance disorder; 4. Not having any previous experience in performing noted balance task; 5. Having a body mass index (BMI) between 25 and 29.9; 6. Self-perception as an overweight person by body shape scale. The criteria for leaving the research include: 1. Lack of desire to continue cooperation in research; 2. Having any skeletal and neurological disorders and problems; 3. Active and coherent participation in any sport and physical activity. The consent form for participation in this study was completed by the children's parents. Also, the present study was approved by the ethics committee of the university research center.

Instruments and Task

Dynamic Balance

In the present study, learning and motor performance was reported as the amount of time to maintain the dynamic balance in the children. The stabilometer (130 cm long X 140 cm wide, with maximum deviation of 18 degrees to left and right side) was used to measure dynamic balance (Chiviacowsky et al., 2018). This instrument includes a moving plate (platform), a chassis, and a control unit. After placing on the platform, the participant should hold the page in a horizontal position. The distortion of the participant's balance and deviation to the left and right caused the stabilometer device to record the deviation from the balance. And at this moment, the light that faced by the person changed from green to red. This device has different timings of 15, 30, 60, and 90 seconds, while 30 seconds was used in the present study. This apparatus has been widely used in studies of motor behavior and in sports psychology (Cardozo & Chiviacowsky, 2015).

Figure Rating Scale

In addition to the BMI index, the body image scale was used to further ensure physical condition as well as children's perception of themselves as an overweight person. One of the common methods in evaluating people's perceived body image is to use the body profiles in which the participant chooses the best shape considering his/her body shape based on his/her perception of his/her body through a series of different shapes and profiles. This range

of body shapes usually consists of 7 profiles and varies from very slim body shapes to very fat body shapes. This scale was reported to have good validity and reliability in previous studies. For example, Collins (1991) examined the test-retest reliability of this scale within a two-week interval and reported a correlation coefficient of .71 when the scale was used to assess children's perceived body image. Other studies have reported acceptable psychometric and validity characteristics of the above scale for the mental evaluation of the perceived body image (Bays et al., 2009; Wertheim et al., 2004).

Procedure

Participants in both experimental and control group were tested in a big room. They participated separately in different stages of the study with the aim of not interfering with each other's results. Initially, the researchers fully explained the requirements for participation in the experiment, and then the participants were randomly assigned into two groups (experimental and control, 12 participants in each group). The participants were given instructions on how to perform the task like maintaining their maximum balance on the stabilometer during 30-second trials. At the end of each practice trial, the participants received feedback on balance time. The participants were invited to a practice session before the experimental manipulation (pre-test). Each group then received an introductory text with information related to the task. The participants in the group of overweight stereotype threat received the following instruction: "this study involves learning a task consisting of remaining in balance on the platform as long as possible during 30 second trials. This task is usually influenced by individual differences such as weight. For example, overweight people generally produce worse results than those who are not overweight." The control group participants received the following instructions: "this study involves learning a task consisting of remaining in balance on the stabilometer as long as possible during the 30 second trials. This task is not influenced by individual differences such as weight." The evaluator reinforced these instructions before beginning each trial of task. Fifteen seconds before beginning each trial, the participants were instructed to step onto the stabilometer. Once a start signal was given, the participants began to move on the platform in a horizontal position and data collection began. The dependent variable was recorded as the time of keeping the balance on the stabilometer. The participants in the first day of the experiment participated in ten 30-second trials, with a 45-second rest intervals between trials in the acquisition phase. To assess the relatively permanent effects (in other words, learning the task), a retention test without feedback was conducted 24 hours later in the second day and consisted of five 30-second trials, with 45-second breaks between each one.

Data Analysis

In order to analyze the considered information, descriptive statistical methods were used. In the inferential statistics section of the study, mixed ANOVA with repeated measures on time factor, independent t-test, as well as the Bonferroni post hoc test were used for group comparison.SPSS software (version 24) was used to analyze the data.

Results

Table 1 shows the mean and standard deviation of some of the demographic variables of participants in the experimental and control group at the beginning

of the study. As it is evident, all indices are the same between the two groups (see Table 1).

Table 1
Demographic characteristics of the participants in the groups

| Characteristics | Groups (*Mean±SD*) | | *p*-value* |
	stereotypical threat	control	
Gende	Female	Female	-
Age(year)	9.33±0.49	9.17±0.57	.45
Height (cm)	136.10±6.87	132.29±9.23	.26
Weight (kg)	47.80±4.78	44.74±6.40	.19
BMI	25.78±1.52	25.46±1.41	.60
Perceived body image(Pretest)	5.16±0.38	5.00±0.00	.15
Balance performance (Pretest)	24.30±2.93	26.65±3.33	.08

Note. The significance level was set as $p \leq .05$.

Balance Performance

Acquisition

The results of mixed ANOVA in a 2 (overweight stereotype threat versus control group) × 10 (number of practice trials) with repeated measures on the time factor as the balance index in the acquisition phase showed that the main effect of acquisition phase was significant ($F[9, 198] = 39.28$, $p = .0001$, partial η2 = .64), the main effect of the group ($F[1, 22] = 107.40$, $p = .0001$, partial η2 = .83), and the interaction effect ($F[9, 198] = 51.49$, $p = .0001$, partial η2 = .70), were also significant. Based on the results of the Bonferroni post hoc test, it was determined that the participants in the stereotype threat group (19.62 ± 0.69) had weaker balance performance than the control group (29.79 ± 0.69) in all trials (see Figure 1).

Retention

The results of mixed ANOVA in a 2 (overweight stereotype threat versus control group) × 5 (number of practice trials) with repeated measures on the time factor as the balance index in the retention phase showed that the main effect of the retention phase ($F[4, 88] = 5.49$, $p = .001$, partial η2 = .20), the main effect of group ($F[1, 22] = 702.47$, $p = .0001$, partial η2 = .97), and interaction effect were significant ($F[4, 88] = 6.14$, $p = .0001$, partial η2 = .21). In other words, given the findings of the main effect of group, it was demonstrated that the stereotype threat group (12.92 ± 0.45) had weaker balance performance than the control group (29.94 ± 0.45) in all trials in the retention phase (see Figure 1).

Figure 1

Maintaining the balance on the stabilometer during 30-second trials, one trial in the pre-test,
10 trials in the acquisition phase and 5 trials in the retention test for two experimental groups
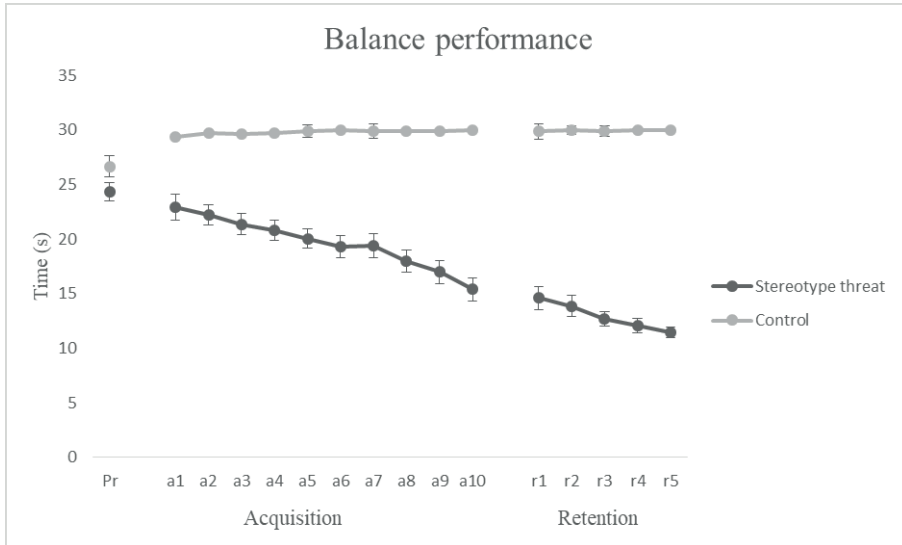
Note. Error bars represent standard error.

Discussion

The present study aimed to investigate the effect of overweight stereotype on balance task learning in children. To the best of our knowledge, this study is one of the first studies that puts under investigation the effect of overweight stereotype threat among children. The Findings demonstrated that as practice phase begins and after pre-test phase, the group that received instructions on overweight stereotype threat manifested significantly worse balance performance compared to the control group. This reduction in performance would continue to the end of the acquisition phase as well as the retention phase as an index of motor learning.

The findings of the present study underscore the permanent and immediate detrimental effects of these social-emotional and cognitive variables on motor performance and learning in children. The findings highlight the negative effects of overweight stereotype threat on motor performance. These findings are in line with those of other studies in this field (Chiviacowsky et al., 2018; Cardozo & Chiviacowsky, 2015; Raphael, 2017). Cardozo and Chiviacowsky (2015), for instance, in a study examining the effects of overweight stereotype threat on motor performance and learning in adults reported a significant reduction in motor performance and learning among the stereotype threat group. Similarly, in another study, Chiviacowsky et al. (2018) explored the effect of age-based stereotype threat on motor learning and performance. In their study, before practice the participants were informed that their performance would be

compared with the performance of young adults (negative stereotype condition), with performance of participants 20 years older (positive stereotype condition), or that performance on the task was not influenced by age (control stereotype condition). Their findings revealed worse learning for participants in the negative stereotype condition group relative to the other groups.

Although multitude of studies carried out in this area have shown the negative impact of stereotype threat on performance, the effective mechanisms underlying this phenomenon are still unclear. Issues such as: whether the decline in individuals' performance in the context of stereotype threat is related either to their concern about others' negative evaluations or their own individual performance remains unclear. Or whether people in this condition underperform (lower their performance) due to accepting common stereotypes about themselves? (In these cases, overweight people performed poorly in balance task relative to the others). Nevertheless, studies have indicated that examining the type of threat can provide more insight about the above mentioned issues (Barber, 2017).

Other possible mechanisms involved in reduced functioning and performance under stereotype threat include increased anxiety, negative thoughts related to the task, and stress (Steel & Aronson, 1995). According to Steel and Aronson (1995) individuals under negative stereotype threat conditions face with enhanced skepticism during task performance and this lack of self-confidence ultimately leads to underperformance. However, other studies have suggested that anxiety in the context of stereotype threat indirectly reduces performance by affecting executive functioning (Schmader et al., 2008). Working memory refers to an individual's ability to focus on a task while hindering other task– unrelated information (Kane & Engle, 2002). As a part of the underlying mechanisms in performing motor skills, it plays an integral role in performance and motor skill learning (Buszard et al., 2017). Under these conditions, anxiety and stress can impair cognitive functioning and, consequently, the motor performance by limiting the capacity of the working memory. Therefore, it seems that the participants of the present study in overweight stereotype threat group confront with a deficit in the efficiency of their working memory and hence a severe decline in performance and motor learning.

Another mechanism used to verify reduced performance and motor learning as well as low confidence in performing balance tasks in individuals with negative stereotype about overweight can be attributed to manipulation of expectations (i.e., expectation reduction) compared to the controls. Based on the results of the previous studies, participants reported that enhanced expectations improve motor performance and learning (Wulf et al., 2012). It can be said that under overweight negative stereotype threat, children perform poorly on a specific task when they hear that learning balance task is affected by individual differences such as height, weight, and gender. The same consequences are true about overweight adults; they generally report poorer outcomes than those who are not overweight; as a result, their expectations are reduced, which in turn, impairs their motor performance and learning as well as their confidence during balance performance.

Another mechanism that explains the detrimental effects of stereotype threat is the emotional-based approach (Drace et al., 2019). In this context, the mood behavior model (Gendolla, 2000) suggests that emotional states such as mood can affect the extent and severity of a particular behavior. In other words, people use their emotions as accurate and immediate information to evaluate and judge an individual's behavior (Gendolla, 2000). For example, when people tackle challenges in performing skills such as asking how difficult the task is? Or how much effort does it take to accomplish a task? Their mood states can constantly impact the answer to these questions. Accordingly, compared to positive mood conditions like happiness, in negative mood conditions such as sadness and fear, people figure out performance difficulty and the degree of effort needed to perform it more difficult (Gendolla Krüsken, 2001). The higher estimate of performance difficulty and required effort for successful performance are associated with decline in performance. The findings of this study are consistent with the predictions of mood behavior model (Gendolla, 2000). It can be said that when children are exposed to overweight negative stereotype threat, they express negative emotional states; lose confidence in balance; and perform the balance task worse than under usual conditions by accepting common stereotypes about being overweight. In this study, the effect of negative stereotype threat continued to the retention phases and was observable for a longer period of time. However, since in the present study, emotional states and moods such as sadness, fear, and even happiness were not taken into account, future studies need to explore the issue. Another limitation of the present study was related to the sample size, and gender (only girls); for better generalization of the results, future research can be conducted using either a larger sample size or different participants.

Conclusion

In conclusion, the findings of the present study provided us with reasons why negative stereotypical conditions such as overweight stereotype threat impact learning balance task in children. The results can be applied to situations in which overweight children learn a sport motor skill. In these situations, it is recommended that educators and practitioners reduce or even reverse the stereotypical effects by emphasizing the ineffectiveness of individual characteristics such as being overweight on performance as well as motor learning and, thereby prevent performance reduction in children during performance and learning.

Reference

Barber, S. J. (2017). An examination of age-based stereotype threat about cognitive decline: Implications for stereotype-threat research and theory development. *Perspectives on Psychological Science*, *12*(1), 62–90.

Baumeister, R. F. (1984). Choking under pressure: self-consciousness and paradoxical effects of incentives on skillful performance. *Journal of Personality and Social Psychology*, *46*(3), 610.

Bays, H. E., Bazata, D. D., Fox, K. M., Grandy, S., & Gavin, J. R. (2009). Perceived body image in men and women with type 2 diabetes mellitus: correlation of body mass index with the figure rating scale. *Nutrition Journal*, *8*(1), 57.

Beilock, S. L., & Carr, T. H. (2001). On the fragility of skilled performance: What governs choking under pressure. *Journal of Experimental Psychology: General*, *130*, 701–725.

Beilock, S. L., & McConnell, A. R. (2004). Stereotype threat and sport: Can athletic performance be threatened? *Journal of Sport and Exercise Psychology*, *26*(4), 597–609.

Beilock, S. L., Carr, T. H., MacMahon, C., & Starkes, J. L. (2002). When paying attention becomes counterproductive: Impact of divided attention on novice and experienced performance of sensorimotor skills. *Journal of Experimental Psychology: Applied*, *8*, 6–16.

Buszard, T., Farrow, D., Verswijveren, S. J., Reid, M., Williams, J., Polman, R., ... & Masters, R. S. (2017). Working memory capacity limits motor learning when implementing multiple instructions. *Frontiers in Psychology*, *8*, 1350.

Cardozo, P. L., & Chiviacowsky, S. (2015). Overweight stereotype threat negatively impacts the learning of a balance task. *Journal of Motor Learning and Development*, *3*(2), 140–150.

Chalabaev, A., & Sarrazin, P. (2020). Putting Individual Motivations into the Societal Context: The Influence of Social Stereotypes in the Physical Activity Domain. *Handbook of Sport Psychology*, 19–36.

Chalabaev, A., Sarrazin, P., Stone, J., & Cury, F. (2008). Do achievement goals mediate stereotype threat?: An investigation on females' soccer performance. *Journal of Sport and Exercise Psychology*, *30*(2), 143–158.

Chasteen, A. L., Bhattacharyya, S., Horhota, M., Tam, R., & Hasher, L. (2005). How feelings of stereotype threat influence older adults' memory performance. *Experimental Aging Research*, *31*(3), 235–260.

Chiviacowsky, S., Cardozo, P. L., & Chalabaev, A. (2018). Age stereotypes' effects on motor learning in older adults: The impact may not be immediate, but instead delayed. *Psychology of Sport and Exercise*, *36*, 209–212.

Deshayes, M., Clément-Guillotin, C., & Zory, R. (2019). "Men are Better Than Women!" The Positive Effect of a Negative Stereotype Toward Women on a Self-Paced Cycling Exercise. *Journal of Sport and Exercise Psychology*, *41*(4), 242–250.

Drace, S., Korlat, S., & Đokić, R. (2019). When stereotype threat makes me more or less intelligent: The informative role of emotions in effort mobilization and task performance. *British Journal of Social Psychology*. doi:10.1111/bjso.12327

Freedman, D. S., Mei, Z., Srinivasan, S. R., Berenson, G. S., & Dietz, W. H. (2007). Cardiovascular risk factors and excess adiposity among overweight children and adolescents: The Bogalusa Heart Study. *The Journal of Pediatrics*, *150*(1), 12–17.

Gendolla, G. H. (2000). On the impact of mood on behavior: An integrative theory and a review. *Review of General Psychology*, *4*(4), 378–408.

Gendolla, G. H., & Krüsken, J. A. N. (2001). The joint impact of mood state and task difficulty on cardiovascular and electrodermal reactivity in active coping. *Psychophysiology*, *38*(3), 548–556.

Harriger, J. A., & Thompson, J. K. (2012) Psychological consequencesof obesity: Weight bias and body image in overweight and obese youth, *International Review of Psychiatry*, *24*(3), 247–253, doi: 10.3109/09540261.2012.678817

Hayden-Wade, H. A., Stein, R. I., Ghaderi, A., Saelens, B. E., Zabinski, M. F., & Wilfley, D. E. (2005). Prevalence, characteristics, and correlates of teasing experiences among overweight children vs. non-overweight peers. *Obesity Research*, *13*(8), 1381–1392.

Heidrich, C., & Chiviacowsky, S. (2015). Stereotype threat affects the learning of sport motor skills. *Psychology of Sport and Exercise*, *18*, 42–46.

Heinberg, L. J. & Thompson, J. K. (2009). Obesity in Youth: Causes, Consequences, and Cures. American Psychological Association.

Inzlicht, M., & Schmader, T. (Eds.). (2012). *Stereotype threat: Theory, process, and application*. Oxford University Press.

Kane, M. J., & Engle, R. W. (2002). The role of prefrontal cortex in working-memory capacity, executive attention, and general fluid intelligence: An individual-differences perspective. *Psychonomic Bulletin & Review*, *9*(4), 637–671.

Miller, A. L. (2019). Stereotype threat as a psychological feature of work–life conflict. *Group Processes & Intergroup Relations*, *22*(2), 302–320.

Neumark-Sztainer, D., Paxton, S., Hannon, P.J., Hains, J. & Story, M. (2006). Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *Journal of Adolescent Health*, *39*, 244–251.

Puhl, R. M., & Brownell, K. D. (2003). Psychosocial origins of obesity stigma: toward changing a powerful and pervasive bias. *Obesity Reviews*, *4*(4), 213–227.

Puhl, R. M., & Heuer, C. A. (2009). The stigma of obesity: a review and update. *Obesity*, *17*(5), 941–964.

Raphael, L. (2017). Stereotype threat and lift effects on perceived ability and motor task performance of high school physical education students: the moderating role of stereotype endorsement and domain identification. *Movement & Sport Sciences-Science & Motricité*, *95*, 21–30. doi:10.1051/sm/2016005

Rosa, V., Tomai, M., Lauriola, M., & Martino, G. (2019). Body mass index, personality traits, and body image in Italian pre-adolescents: An opportunity for overweight prevention. *Psihologija*, *52*(4), 379–393.

Rukavina, P. B., & Li, W. (2008). School physical activity interventions: do not forget about obesity bias. *Obesity Reviews*, *9*(1), 67–75.

Rukavina, P. B., & Li, W. (2011). Adolescents' perceptions of controllability and its relationship to explicit obesity bias. *Journal of School Health*, *81*(1), 8–14.

Schmader, T. (2002). Gender identification moderates stereotype threat effects on women's math performance. *Journal of Experimental Social Psychology*, *38*(2), 194–201.

Shapiro, J. R., & Neuberg, S. L. (2007). From stereotype threat to stereotype threats: Implications of a multi-threat framework for causes, moderators, mediators, consequences, and interventions. *Personality and Social Psychology Review*, *11*(2), 107–130.

Smolak, L., & Thompson, J.K. (2009). Body image, eating disorders, and obesity in children and adolescents: Introduction to the second edition. In L. Smolak, & J. K. Thompson (Eds.), Body Image, Eating Disorders, and Obesity in Youth: Assessment Prevention, and Treatment (pp. 3–14). American Psychological Association.

Spencer, S. J., Steele, C. M., & Quinn, D. M. (1999). Stereotype threat and women's math performance. *Journal of Experimental Social Psychology*, *35*(1), 4–28.

Spencer, S., Logel, C., & Davies, P. (2016). Stereotype threat. *Annual Review of Psychology*, *67*, 415–437.

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, *69*(5), 797–811.

Thompson, J. K., Heinberg, L. J., Altabe, M. N., & Tantleff-Dunn, S. (1999). Exacting Beauty: Theory, Assessment, and Treatment of Body Image Disturbance. American Psychological Association.

Vartanian, L. R., & Shaprow, J. G. (2008). Effects of weight stigma on exercise motivation and behavior: a preliminary investigation among college-aged females. *Journal of Health Psychology*, *13*(1), 131–138.

Wertheim, E. H., Paxton, S. J., & Tilgner, L. (2004). Test–retest reliability and construct validity of Contour Drawing Rating Scale scores in a sample of early adolescent girls. *Body Image*, *1*(2), 199–205.

World Health Organizzation – WHO (2018). Obesity and Overweigth. http://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight

Wulf, G., Chiviacowsky, S., & Lewthwaite, R. (2012). Altering mindset can enhance motor learning in older adults. *Psychology and Aging*, *27*(1), 14.

Efekat pretnje stereotipa prekomerne težine na motoričko učenje kod dece

Maryam Rabeinia, Esmaeel Saemi, and Rasool Abedanzadeh

Faculty of Sport Sciences, Shahid Chamran University of Ahvaz, Ahvaz, Iran

Cilj ovog istraživanja je bio da se ispita efekat pretnje stereotipa prekomerne težine na motoričko učenje kod dece. Dvadeset četvoro prigodno uzorkovane dece ($M = 9.25 \pm 0.53$ godina) je slučajno podeljeno u dve grupe: grupu pretnje stereotipom (sa naglaskom na individualne karakteristike, tj. prekomernu težinu) i kontrolnu grupu. Zadatak se sastojao u održavanju ravnoteže na stabilometru za vreme proba od po 30 sekundi. Urađena je jedna proba tokom pre-testa, deset za vreme faze usvajanja (veštine, prim. prev.) i pet za vreme testa retencije. Rezultati su pokazali slabije motoričko učenje u grupi koju su činila deca izložena pretnji stereotipa prekomerne težine u odnosu na kontrolnu grupu. Shodno tome, predloženo je da u sličnim situacijama treneri mogu redukovati pretnju ovog stereotipa naglašavajući da individualne karakteristike nisu od značaja (za sticanje veštine kojoj ih obučava, prim. prev.), tj. da prekomerna težina nije od značaja za motoričko izvođenje dece i tako sprečiti negativne posledice ovog stereotipa na učinak i učenje.

Ključne reči: ravnoteža, prekomerna težina, pretnja stereotipa, deca