

Pre-Teens, Social Media, And Body Image: The Role Of Physical Education.

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Abstract: Pre-teens are increasingly using social media, impacting their body image and decreasing physical activity. Platforms like Instagram and TikTok, heavily focused on visuals, might distort their body perception due to constant exposure to external influences. To counteract those negative effects, recent studies showed that physical education (PE) classes might play a crucial role in promoting healthy and active lifestyles. Therefore, the present study aimed to investigate the correlation between the perception of body shape and the intensity of PE classes, according to the daily usage of social media platforms among 2378 Italian pre-teens. Two self-administered questionnaires were used to investigate social media use, perception of body shapes, and intensity of PE classes. A statistically significant correlation between perceived body image and PE intensity was found for males using mainly TikTok and Instagram. It also emerged that PE may have a positive impact on students' bodies. Thus, teachers should incorporate the use of social media platforms in their classes to encourage reflection on the use of technology, promote physical literacy, and improve pre-teens' relationship with their bodies.

Keywords: cross-sectional study; preadolescents; education; body image; physical literacy

1. Introduction

The objective of this study is analyzing the relationship between the perception of body shape and the intensity of physical education classes, according to the daily usage of social media platforms among 2378 Italian pre-teens. The hypothesis was that an active lifestyle could potentially mitigate the negative effects of excessive use of image-centric social media, underlying the relevant role of physical education teachers.

Pre-teens and Social Media

Social-Media are a collection of Internet-based applications created on the technological and ideological foundations of Web 2.0, allowing the creation and exchange of User Generated Content (Kaplan & Haenlein, 2010). These platforms provide users an easy way to connect through messaging, sharing content and photos, which can reveal different aspects of their personalities. These interactions aim to



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improve emotional well-being, foster social connections, and shape digital identity (Turner, 2015). Those peculiarities of social media platforms favoured a wide spreading among all generations, especially the youngest.

Effectively, Generation Z, also known as "digital natives" or "screenagers," is the first generation to be raised entirely on the internet and social media era (Kaplan & Haenlein, 2010; Turner, 2015). This era, where information and communication technologies are becoming increasingly intertwined, is commonly referred to as the "onlife" dimension (Floridi, 2014, 2015). Nowadays, pre-teens are enthusiastic users of social media, even though platforms like Instagram and TikTok have an age limit of 13 or above. It is important to note that there are variations in age limits across Europe (Smahel et al., 2020). Despite the existence of age verification mechanisms and parental consent tools, the limits on social media use among pre-teens are still ineffective (Rideout & Fox, 2018). Pre-teens can be exposed to risks such as inappropriate content, bullying, grooming, child sexual abuse, body shaming or radicalisation. Access to age-inappropriate content is often uncontrolled by adults, leading to negative impacts (Fardouly et al., 2018).

Pre-teens and Body- Image

Body image can be described as the perception of oneself in the world through the organization of sensory experiences via the body (Merleau-Ponty, 2013; Sartre, 2014).

Body image is a complex experience incorporating the way one perceives, thinks, feels, and behaves in relation to their physical appearance and function. This multi-dimensional construct is a crucial aspect of embodiment and encompasses various aspects of human experience, through several dimensions (Cash & Smolak, 2011; Smolak, L., Thompson, 2009). In particular, through the subjective and affective aspects which are closely linked to an individual's satisfaction with their body. Therefore, according to Byrne (Byrne, 2012), body image refers to an individual's conscious evaluation of physical appearance and the satisfaction deriving from the perceived look. The two dimensions mentioned are closely connected, with the cognitive dimension referring to an individual's thoughts, beliefs, and attitudes towards their appearance, and the behavioral dimension describing a person's actions related to their body image, such as avoiding mirrors or engaging in body-monitoring behaviors.

In the past, it was believed that adolescence was the most important time for shaping body image. However, recent studies show that this critical period may actually begins earlier, during the rapid transition from childhood to adolescence. During this earlier phase, it is possible for body image concerns to arise, which can lead to behaviors such as dieting, social anxiety, inactivity, and others. These behaviors can ultimately set the stage for long-term body image struggles (Evans et al., 2017; Fardouly & Vartanian, 2016; Hughes et al., 2018; McCrae et al., 2017). During childhood and adolescence, there are certain periods when significant physical, emotional, and social changes occur. These periods are known as sensitive periods, and they play a crucial role in shaping body image. Low self-esteem is a common issue that affects how individuals perceive physical appearance and can further increase the risk of developing body concerns (Cash & Smolak, 2011; Rousseau et al., 2020).

Pre-teens, Social Media, and Body- Image

Body image is influenced by three main variables: peers, relatives, and media. This model takes into account sociocultural, psychological, and biological factors that affect the way individuals live, interact with others, and experience the world through their bodies. For example, the tripartite influence model has been previously used to study the mechanisms behind body dissatisfaction and eating disorders among girls (Shroff & Thompson, 2006). More recently, Sæle et al., based on the concept of pan-optic power mechanism introduced by Foucault (Foucault, 1995) have proposed a model called BOPS (body and Body pressure, Omniopticon, Panopticon and Synopticon) to explain how the body image of the younger generation is influenced by various power strategies employed by different entities such as authorities, individuals, peers, family members, celebrities, and social media (Sæle et al., 2021).

In fact, pre-teens who use social media are not just consumers, but also creators of content. This generation an “Omniopticon” situation where everyone can see and influence each other, leading to the spread of idealized body images. This results in the continuous reshaping and remixing of body ideals, which can have negative effects (Sæle et al., 2021).

The social comparison theory suggests that people tend to compare themselves with others who are similar to them in order to fulfill the need for self-evaluation. Such comparisons can be made with individuals who are either better off (upward social comparison) or worse off (downward social comparison) than themselves (Festinger, 1954; Vani et al., 2021). In our society, physical appearance is an important factor that contributes to an individual's overall self-esteem (Tiggemann & Barbato, 2018). Adolescent girls, for example, tend to compare themselves and their appearance with their peers on social networking sites, where the number of likes on their posts is used as a parameter for the social comparison process (Chua & Chang, 2016). Upward social comparison, where posts receive a higher number of likes than usual, can decrease an individual's perceived self-worth and body satisfaction, while downward comparisons, where social network users receive less likes than usual, can preserve body satisfaction and self-esteem (Tiggemann & Polivy, 2010).

Continuous exposure to manipulated photos may lead to a decrease in body satisfaction, particularly among girls (Kleemans et al., 2018). Social comparisons, especially among preadolescents, are linked to negative mental health outcomes (Fardouly et al., 2020). This dissatisfaction with one's body can increase the risk of developing depressive symptoms, particularly among early adolescent girls (Paxton et al., 2006). Gender and development play a significant role in body dissatisfaction and depressive symptoms. In girls, body dissatisfaction is linked to an increase in depressive symptoms, beginning in early teenage years. For boys, the relationship is more complex, with evidence for both directions of association, with varying prominence during development (Sharpe et al., 2018).

It has been suggested in previous studies that physical activity can have a positive effect on one's body image satisfaction. For example, Fernández-Bustos et al. (Fernández-Bustos et al., 2019) found that individuals who participate in sports or physical activity report lower scores on measures that capture negative body image constructs.

However, it is important to note that the relationship between physical activity and body dissatisfaction is bi-directional, as body image can either motivate or deter physical activity and sports participation. It is worth mentioning that spending excessive time on digital media can increase the risk of pre-teens becoming overweight. However, pre-teens who engage in at least 6 hours of leisure-time physical activity per week are less likely to be overweight due to sedentary digital media use. Rutter et al. (Rutter et al., 2021) found that higher use of social media is associated with depression, anxiety, and loneliness in adolescents, while increased physical activity is associated with decreased depression and anxiety symptoms, indicating that physical activity can mediate the relationship between social media use and depression/anxiety.

In summary, an active lifestyle can help counteract the negative effects of sedentary behaviors and body dissatisfaction among preteens. Jankauskiene et al. (Jankauskiene et al., 2020) found that adolescents who participate in sports have greater body appreciation, self-esteem, and lower body dissatisfaction than those who do not engage in any sports.

Under these circumstances, the present cross-sectional study aimed to investigate the correlation between the perception of body shape and the intensity of physical education classes, also according to the daily usage of social media platforms among pre-teens.

2. Materials and Methods

Participants and Study design

The present cross-sectional study involved 2378 Italian pre-teens aged 11-13 years ($M_{age}=12.02$ years, $SD=0.82$). Cross-sectional studies are best used to determine the prevalence and associations of multiple exposures and outcomes. They are also useful for establishing preliminary evidence and investigating new theoretical constructs. Overall, 778 (32.7% of the total sample) (males: 54.1%; females: 45.9%) participants were 11 years old, 766 (32.2% of the total sample) (males: 51.9%; females: 48.1%) were 12 years old and 834 (35.1% of the total sample) (males: 52.5%; females: 47.5%) were 13 years old. The data collection was implemented during school hours in collaboration with the teachers at secondary schools.

To collect data, two anonymous and self-administered questionnaires were provided to a convenience sample composed by 2378 Italian pre-teens. It is important to mention that the study used a convenience sampling approach (Marengo et al., 2018). Despite this, the approach allowed the participation of individuals from diverse backgrounds and geographical locations. This ensured that the data collected represented a wide range of perspectives and experiences. Although the findings may not be generalizable to the broader population, they provide valuable insights into the correlation between social media, body representation, and body image in this sample.

The purposes of the questionnaires were to investigate their social media use (including the type, frequency, and image-based usage), their perceived body shape, their ideal body shape, and their physical activity levels. The ethical approval was obtained from the Institutional Review Board of the Department of Human Sciences, Society and Health at the University of Cassino and Southern Lazio (Approval number: 3RA2.2022.06.15). In addition, the informed consent was obtained from parents and authorizations from all schools involved in the survey.

Instruments

Firstly, all participants were asked to list their most used social networks and to indicate if the daily use was less than 2 h per day or 2 or more hours per day (Di Gesto et al., 2020).

To evaluate the participants' Desired Body Image (DBI) and Perceived Body Image (PBI), the study used the Body Figure Rating scale (BFR). The BFR was used compared to their Actual Body Size (ABS) (Hoelscher et al., 2003). Additionally, physical activity levels and the frequency of physical education classes were assessed by means of the Italian version of the Physical Activity Questionnaire for Older Children (PAQ-C). The PAQ-C score is then derived from nine items, each scored between 1 (low level) and 5 (high level) with reference to the activities occurring the seven days before the administration of the questionnaire (Gobbi et al., 2016; Kowalski et al., 2004).

Statistical analysis

Due to the non-normal data distribution, non-parametric analyses were conducted for descriptive statistics. Generally, the extent of missing data was moderate, ranging from 0 to 10%. Descriptive statistics were computed for all the investigated variables. Generally, the extent of missing data across each outcome was moderate.

The univariate- Shapiro-Wilks's *W* test—and multivariate tests suggested that data did not come from normally distributed univariate or multivariate distributions. Transformations did not correct normality. Therefore, non-parametric analysis was conducted for descriptive statistics. Generally, the extent of missing data across each outcome was moderate, ranging from 0 to 10%.

Correlations between Desired Body Image (DBI) and Perceived Body Image (PBI) among males and females, the frequency of participating in physical education classes and the use of social media were ascertained by Pearson's chi-squared test for independence and, where statistically significant differences were found, the size of the effects was assessed with the Cramer's *V* and interpreted as follows: 0.1 represents a small effect, 0.3 represents a medium effect and 0.5 represents a large effect.

3. Results

A total of 2,378 pre-teens participated in the study. Among them, 2,078 (87.5%) reported using social media, and 99% use messaging apps such as WhatsApp or Telegram. The most popular social media platforms among them are TikTok (74.4%), Instagram (57.2%), and Snapchat (27.9%). Meanwhile, WhatsApp emerged as the most widely used instant messaging app among the participants (99.9%). Based on the survey, 66.2% of respondents reported spending 2 or more hours on TikTok daily, with 72.7% of female respondents spending this amount of time. For Instagram, 41.9% of respondents reported spending 2 or more hours daily, with 55.7% of female respondents spending this amount of time. Only 9.2% of respondents reported spending 2 or more hours daily on Snapchat, with 68.9% of female respondents spending this amount of time. For WhatsApp, 54% of respondents reported spending 2 or more hours daily, with 57.6% of female respondents spending this amount of time.

Focusing on the BFR scale, among males ($n=835$), 83.1% identified their ideal body shape being normal weight, 14.6% as overweight and 1.7% as underweight. Concerning their perceived body shape, 4.7% identified themselves as underweight 57.7% as normal weight, 37% as overweight, and 0.6% as obese. Among females ($n=730$), 87.3% identified their ideal body shape being normal weight, 5.2% as overweight and 7.5% as underweight. Concerning their perceived body shape, 9.5% identified themselves as underweight 64.5% as normal weight, 25.6% as overweight, and 0.4% as obese. Statistically significant correlations were found concerning the relationship between the ideal body shape and the perceived body shape both for males ($p<0.001$; Cramér's $V = 0.28$) and females ($p<0.001$; Cramér's $V = 0.29$).

Concerning physical education, the answers were extrapolated from the PAQ-C questionnaire. Respondents declared of being actively engaged in physical education classes with different frequencies: always (total:45%; males: 54% females: 36.4%), often (total: 34.7%; males: 31.9%; females: 37.9%), sometimes (total:13.8%; males:9.8%; females:18.2%), rarely (total: 3.2%; males:2.2%; females: 4.4%), never (total:2.5%; males:2%; females:3.1%).

The last part of the analyses aimed at investigating the relationship among the abovementioned variables.

In particular, by correlating the frequency of being actively engaged in physical education classes with the perception of the body shape, results showed a statistically significant correlation coefficient ($p<0.001$) for male respondents, while no statistically significant correlation was found for female respondents.

By further examining the statistically significant correlation found among males, a stronger correlation ($p<0.001$) emerged for those more frequently engaged in active physical education classes and using Instagram for more than 2 hours/day, compared to those who use Tik Tok for more than 2 hours/day ($p<0.01$). Surprisingly, the same results were not found for female respondents.

4. Discussion

The aim of this cross-sectional study was to examine the relationship between pre-teens' perception of body shape and their physical education class intensity, in addition to their daily social media usage. In this context, it is important to recognize the signs and symptoms of stress on preteens' bodies and provide support when needed. Factors that affect body perception and physical activity habits should be given special attention, as they are critical to overall well-being and quality of life. Research shows that the opportunity to engage in physical activity, socialize and interact with peers is fundamental to an individual's existence. The signs of problematic situations are evident in pre-teens' bodies, so it is important to consider the body not only from a medical perspective but also as a means for educational programs and a point of contact between personal background and the external environment (Di-gennaro & Iannaccone, 2023a, 2023b; Iannaccone, 2022).

In today's world, the external appearance is an important factor in how individuals feel about themselves (Tiggemann & Barbato, 2018). Likes on social media have become a way for people, especially teenage girls, to compare themselves with others (Chua & Chang, 2016). Research has shown that receiving a "like" on a social network, results in increased activity in the nucleus accumbens - a key brain structure associated with happiness (Meshi et al., 2013). This mechanism could lead to a continuous cycle of posting altered pictures on social media to meet beauty standards, gain more likes, and

counteract self-doubt (Eshiet, 2020). On the contrary, if a posted picture does not receive the expected number of likes, it is often removed (Jang et al., 2015). In particular, girls often post selfies in hopes of receiving "likes" and followers as a form of peer validation of their physical appearance (Chua & Chang, 2016). Nevertheless, the exposure to manipulated photos might lead to a lower body satisfaction, especially for girls (Kleemans et al., 2018) and the social comparisons are associated with negative mental health among preadolescents (Fardouly et al., 2020). Body dissatisfaction is a condition where individuals are unhappy with their physical appearance.

Previous reports suggest that physical activity could be a positive mediator that counters the negative effects of body image dissatisfaction. For example, Fernández-Bustos et al. (Fernández-Bustos et al., 2019) found that individuals who engage in sports or physical activity have lower scores on measures that capture negative body image constructs. However, it is important to note that the relationship between physical activity and body dissatisfaction is bi-directional. This means that body image can both motivate or deter physical activity and sports participation (Sabiston et al., 2019). It is worth mentioning that spending more time in sedentary activities, such as using digital media, increases the risk of pre-teens being overweight.

In addition, a prior research study focused on exploring the effects of a program designed to raise awareness among preadolescents about the importance of having an active lifestyle. The program aimed to encourage physical activity as a means of mitigating the harmful sociological and physiological effects of stressful situations. It is worth mentioning that the intervention was conducted by the physical education teacher to motivate the preadolescents toward the adoption of an active lifestyle. In particular, the promotion strategy comprised 3 instruments: the daily monitoring of steps using pedometers; motivational speeches regarding the healthy benefits of being physically active; specific classes promoting a better understanding of the personal body. Results showed that the intervention induced an increase of the physical activity levels and a better coping of stressful events among pre-teens (Digennaro & Iannaccone, 2023a).

5. Conclusions

The widespread use of social media is becoming a cause for concern as it is associated with various negative health effects. Specifically, the excessive use of image-based social media platforms like Instagram and TikTok may lead to body dissatisfaction among pre-teens who are still developing their self-identity. Furthermore, spending a lot of time on these platforms can lead to less physical activity and sedentary behavior, which can negatively impact overall health and well-being.

It is important for physical education teachers to recognize these societal changes and adjust their teaching methods accordingly. For instance, by promoting active physical education classes, teachers can help pre-teens develop a better relationship with their bodies and reduce the negative impact of societal beauty standards. This approach can counteract the onset of body dissatisfaction and help pre-teens maintain a healthy lifestyle.

In conclusion, social media platforms are causing preadolescents to experience rapid changes in the way they cultivate social interactions, relationships, and beauty models. Through social media, individuals can share a filtered and idealized version of themselves, seeking approval from their peers. This phenomenon is negatively impacting pre-teens' body image, leading to a sense of dissatisfaction regarding their

bodies. Therefore, parents, educators, and all individuals involved in the developmental process should be aware of this issue and design goal-oriented interventions to counteract these detrimental effects.

References

- Byrne, L. (2012). Neuroscientific perspectives on body image. In *Encyclopedia of body image and human appearance* (pp. 568–573). Elsevier, London.
- Cash, T., & Smolak, L. (2011). *Body image: A handbook of science, practice, and prevention* (2nd ed.). Guilford Press, 2011.
- Chua, T. H. H., & Chang, L. (2016). Follow me and like my beautiful selfies: Singapore teenage girls' engagement in self-presentation and peer comparison on social media. *Computers in Human Behavior*, *55*, 190–197. <https://doi.org/10.1016/j.chb.2015.09.011>
- Di Gesto, C., Matera, C., Nerini, A., Policardo, G. R., & Stefanile, C. (2020). Measure the activities related to images and appearance comparison on Instagram: Validation of the instagram image activity scale and the instagram appearance comparison scale. *Psicologia Della Salute*, *3*, 109–128. <https://doi.org/10.3280/PDS2020-003005>
- Digennaro, S., & Iannaccone, A. (2023a). Being a docile body: the effects on preadolescents of the social restrictions imposed during COVID-19. *Contemporary Social Science*, *18*(1), 90–108. <https://doi.org/10.1080/21582041.2022.2162571>
- Digennaro, S., & Iannaccone, A. (2023b). Check your likes but move your body! How the use of social media is influencing pre-teens body and the role of active lifestyles. *Sustainability*, *15*(4), 3046. <https://doi.org/10.3390/su15043046>
- Eshiet, J. (2020). “Real me versus social media me”: filters, Snapchat dysmorphia and beauty perceptions among young women. *Electronic Theses, Projects, and Dissertations*, *6*, 16–93.
- Evans, E. H., Adamson, A. J., Basterfield, L., Le Couteur, A., Reilly, J. K., Reilly, J. J., & Parkinson, K. N. (2017). Risk factors for eating disorder symptoms at 12 years of age: A 6-year longitudinal cohort study. *Appetite*, *108*, 12–20. <https://doi.org/10.1016/j.appet.2016.09.005>
- Fardouly, J., Magson, N. R., Johnco, C. J., Oar, E. L., & Rapee, R. M. (2018). Parental control of the time preadolescents spend on social media: links with preadolescents' social media appearance comparisons and mental health. *Journal of Youth and Adolescence*, *47*(7), 1456–1468. <https://doi.org/10.1007/s10964-018-0870-1>
- Fardouly, J., Magson, N. R., Rapee, R. M., Johnco, C. J., & Oar, E. L. (2020). The use of social media by Australian preadolescents and its links with mental health. *Journal of Clinical Psychology*, *76*(7), 1304–1326. <https://doi.org/10.1002/jclp.22936>
- Fardouly, J., & Vartanian, L. R. (2016). Social media and body image concerns: current research and future directions. *Current Opinion in Psychology*, *9*, 1–5. <https://doi.org/10.1016/j.copsyc.2015.09.005>
- Fernández-Bustos, J. G., Infantes-Paniagua, Á., Cuevas, R., & Contreras, O. R. (2019). Effect of physical activity on self-concept: theoretical model on the mediation of body image and physical self-concept in adolescents. *Frontiers in Psychology*, *10*(JULY), 1537. <https://doi.org/10.3389/fpsyg.2019.01537>

- Festinger, L. (1954). A Theory of social comparison processes. *Human Relations*, 7(2), 117–140. <https://doi.org/10.1177/001872675400700202>
- Floridi, L. (2014). *The fourth revolution: how the infosphere is reshaping human reality* (2014 OUP Oxford, Ed.).
- Floridi, L. (2015). *The Onlife manifesto: being human in a hyperconnected era*. Springer.
- Foucault, M. (1995). *Discipline and punish. The birth of the prison*. New York: Random House.
- Gobbi, E., Elliot, C., Varnier, M., & Carraro, A. (2016). Psychometric properties of the physical activity questionnaire for older children in Italy: testing the validity among a general and clinical pediatric population. *PLOS ONE*, 11(5), e0156354. <https://doi.org/10.1371/journal.pone.0156354>
- Hoelscher, D. M., Day, R. S., Kelder, S. H., & Ward, J. L. (2003). Reproducibility and validity of the secondary level school-based nutrition monitoring student questionnaire. *Journal of the American Dietetic Association*, 103(2), 186–194. <https://doi.org/10.1053/jada.2003.50031>
- Hughes, E. K., Mundy, L. K., Romaniuk, H., Sawyer, S. M., Wake, M., Williams, J., Olds, T., Allen, N. B., & Patton, G. C. (2018). Body image dissatisfaction and the adrenarchal transition. *Journal of Adolescent Health*, 63(5), 621–627. <https://doi.org/10.1016/j.jadohealth.2018.05.025>
- Iannaccone, A. (2022). Physical activity for a positive coping during stressful situations: an action research. *Italian Journal of Health Education, Sports and Inclusive Didactics*, 6(1). <https://doi.org/https://doi.org/10.32043/gsd.v6i1.549>
- Jang, J. Y., Han, K., Shih, P. C., & Lee, D. (2015). Generation Like: comparative characteristics in Instagram. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*, 4039–4042. <https://doi.org/10.1145/2702123.2702555>
- Jankauskiene, R., Baceviciene, M., & Trinkuniene, L. (2020). Examining body appreciation and disordered eating in adolescents of different sports practice: cross-sectional study. *International Journal of Environmental Research and Public Health*, 17(11), 4044. <https://doi.org/10.3390/ijerph17114044>
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), 59–68. <https://doi.org/10.1016/j.bushor.2009.09.003>
- Kleemans, M., Daalmans, S., Carbaat, I., & Anschütz, D. (2018). Picture perfect: the direct effect of manipulated Instagram photos on body image in adolescent girls. *Media Psychology*, 21(1), 93–110. <https://doi.org/10.1080/15213269.2016.1257392>
- Kowalski, K. C., Crocker, P. R. E., & Donen, R. M. (2004). The physical activity questionnaire for older children (PAQ-C) and adolescents (PAQ-A) manual. *College of Kinesiology, University of Saskatchewan*, 87(1), 1–38.
- Marengo, D., Longobardi, C., Fabris, M. A., & Settanni, M. (2018). Highly-visual social media and internalizing symptoms in adolescence: The mediating role of body image concerns. *Computers in Human Behavior*, 82, 63–69. <https://doi.org/10.1016/j.chb.2018.01.003>
- McCrae, N., Gettings, S., & Purssell, E. (2017). Social media and depressive symptoms in childhood and adolescence: a systematic review. *Adolescent Research Review*, 2(4), 315–330. <https://doi.org/10.1007/s40894-017-0053-4>
- Merleau-Ponty, M. (2013). *Phenomenology of perception*. Routledge.
- Meshi, D., Morawetz, C., & Heekeren, H. R. (2013). Facebook, Being Cool, and Your Brain: What Science Tells Us. *Frontiers for Young Minds*, 1. <https://doi.org/10.3389/frym.2013.00004>

- Paxton, S. J., Neumark-Sztainer, D., Hannan, P. J., & Eisenberg, M. E. (2006). Body dissatisfaction prospectively predicts depressive mood and low self-esteem in adolescent girls and boys. *Journal of Clinical Child & Adolescent Psychology*, 35(4), 539–549. https://doi.org/10.1207/s15374424jccp3504_5
- Rideout, V., & Fox, S. (2018). Digital Health Practices, Social Media Use, and Mental Well-Being Among Teens and Young Adults in the U.S. *Articles, Abstracts, and Reports*.
- Rousseau, A., Rodgers, R. F., & Eggermont, S. (2020). A biopsychosocial model for understanding media internalization and appearance dissatisfaction among preadolescent boys and girls. *Communication Research*, 47(3), 346–372. <https://doi.org/10.1177/0093650217739996>
- Rutter, L. A., Thompson, H. M., Howard, J., Riley, T. N., De Jesús-Romero, R., & Lorenzo-Luaces, L. (2021). Social media use, physical activity, and internalizing symptoms in adolescence: cross-sectional analysis. *JMIR Mental Health*, 8(9), e26134. <https://doi.org/10.2196/26134>
- Sabiston, C. M., Pila, E., Vani, M., & Thogersen-Ntoumani, C. (2019). Body image, physical activity, and sport: A scoping review. *Psychology of Sport and Exercise*, 42(December 2018), 48–57. <https://doi.org/10.1016/j.psychsport.2018.12.010>
- Sæle, O. O., Sæther, I. K., & Viig, N. G. (2021). The ideal body: a social construct? Reflections on body pressure and body ideal among students in upper secondary school. *Frontiers in Sports and Active Living*, 3(October), 1–11. <https://doi.org/10.3389/fspor.2021.727502>
- Sartre, J. P. (2014). *L'essere e il nulla*. Il Saggiatore.
- Sharpe, H., Patalay, P., Choo, T.-H., Wall, M., Mason, S. M., Goldschmidt, A. B., & Neumark-Sztainer, D. (2018). Bidirectional Associations between body dissatisfaction and depressive symptoms from adolescence through early adulthood. *Dev Psychopathol*, 30(4), 1447–1458. <https://doi.org/10.1017/S0954579417001663>
- Shroff, H., & Thompson, J. K. (2006). The tripartite influence model of body image and eating disturbance: a replication with adolescent girls. *Body Image*, 3(1), 17–23. <https://doi.org/10.1016/j.bodyim.2005.10.004>
- Smahel, D., Zlamal, R., Machackova, H., Olafsson, K., & Staksrud, E. (2020). *EU Kids Online 2020: technical report*. <https://doi.org/10.21953/lse.47fdeqj010fo>
- Smolak, L., Thompson, J. K. (2009). *Body Image, Eating Disorder, and Obesity in Youth* (L. Smolak & J. K. Thompson, Eds.; 2nd ed.). American Psychological Association.
- Tiggemann, M., & Barbato, I. (2018). “You look great!”: The effect of viewing appearance-related Instagram comments on women’s body image. *Body Image*, 27, 61–66. <https://doi.org/10.1016/j.bodyim.2018.08.009>
- Tiggemann, M., & Polivy, J. (2010). Upward and downward: Social comparison processing of thin idealized media images. *Psychology of Women Quarterly*, 34(3), 356–364. <https://doi.org/10.1111/j.1471-6402.2010.01581.x>
- Turner, A. (2015). Generation Z: technology and social interest. *The Journal of Individual Psychology*, 71(2), 103–113.
- Vani, M., Murray, R., & Sabiston, C. (2021). Body image and physical activity. In *Essentials of exercise and sport psychology: An open access textbook* (pp. 150–175). Society for Transparency, Openness, and Replication in Kinesiology. <https://doi.org/10.51224/B1007>