

USING MESSAGE EMOJI TO UNDERSTAND EMOTIONS AND OPINION IN ATHLETES

UTILIZZO DEGLI EMOJI NEI MESSAGGI DI TESTO PER COMPRENDERE LE EMOZIONI E LE OPINIONI DEGLI SPORTIVI

Iona T^{1*}

Università Magna Graecia di Catanzaro

iona@unicz.it

Vaccaro M.^{2,3}

Azienda Sanitaria Locale di Collegno e Pinerolo - Asl To3

marianna.vaccaro@yahoo.it

Vaccaro P.¹

Department of Medicine and Surgical Science, University of Magna Graecia

paolavaccaro93@libero.it

Bollo M.⁴

Department of Psychology, University of Turin

martinabollo95@gmail.com

Masala D¹.

Department of Medicine and Surgical Science, University of Magna Graecia

d.masala@unicz.it

Abstract:

This study aimed at investigating how the emoji used in a conversational text message is able to influence emotional reactions and decision-making process, as well as studying psychological wellbeing, self-efficacy, body perception, interoceptive awareness in athletes and non-athletes people. A self-administered questionnaire about socio-demographical items, and IPAQ, BIDA, SAQ and WHO-5 questionnaires, through Google Form, was distributed and filled in by 100 subjects. In addition 18 WhatsApp chat images of text messages, created ad hoc, were presented to the participants, they are images of short communications, composed by a question and an answer between a parent and a daughter/son (9 images), and between two friends (9 images). All sample, considers the received replies as more positive when the smile emoji is present. Moreover, in some contexts being a sportive lead to a more positive interpretation of the received message. Then, athletes turned out to have higher levels of psychological wellbeing and a better life quality, rather than

non-athletes. The present study suggests important implications for athletes and for sport community in general. In particular, further studies on differences about social roles, age and relationship between interlocutors could be helpful and interesting.

Abstract:

Lo scopo di questa ricerca è stato quello di studiare come la presenza di emoji, all'interno di un messaggio di testo conversazionale, può influenzare le reazioni emotive e i processi decisionali dei soggetti, e studiare le differenze in termini di benessere psicologico, autoefficacia, percezione del proprio corpo, consapevolezza delle sensazioni corporee, tra il campione di atleti e di non atleti. È stato distribuito e compilato da 100 soggetti un questionario autosomministrato su item sociodemografici e le scale IPAQ, BIDA, SAQ e WHO-5, tramite Google Form. Inoltre, sono state presentate ai partecipanti 18 immagini di messaggi di testo di chat WhatsApp, create ad hoc di brevi comunicazioni, composte da una domanda e una risposta tra un genitore e una figlia/figlio (9 immagini), e tra due amici (9 immagini). Il campione, costituito da atleti e non atleti, giudica le risposte ricevute più positive quando è presente l'emoji con il sorriso. In alcuni contesti sembra che essere uno sportivo possa portare ad un'interpretazione più positiva del messaggio ricevuto. Infine, gli atleti sembrano avere più alti livelli di benessere psicologico e una migliore qualità della vita, rispetto ai non atleti. Il presente studio suggerisce importanti implicazioni per gli atleti e per la comunità sportiva. In particolare, suggeriamo che sia interessante eseguire ulteriori studi, andando a investigare le differenze per quanto riguarda i ruoli sociali, l'età e il legame fra gli interlocutori.

Keywords: Emotion; Emoji; Sport; Athletes; Performance.

Keywords: Emozioni; Emoji; Sport; Atleti; Performance.

1. Introduction

The influence of emotions on sport performance is an increasingly important issue, mainly over the last past 40 years (McCarthy, 2011). In order to describe and understand their role in the sport context, different researchers refer back to the emotion's definition by Deci (1980); in particular, an emotion is a reaction/response to a stimulus event (real or imaginary) which implies a change in a person's viscera and musculature; indeed, it could be expressed through facial changes and action tendencies and can result in subsequent behaviours. Emotions are composed of three aspects: the subjective experience, the physiological response and the tendency to action. Therefore, emotion can produce behaviours directing people's resources toward or away from an object or a task (Vallerand & Blanchard, 2000). Furthermore, emotions can have an impact on the physiological arousal level or on cognition. Elevated arousal level can promote gross motor skills, which results in increased physical effort and an elevated stress of muscle resources; elevated arousal level can also compromise fine motor skills, that may have an impact on the coordination and stability skills. High arousal level can also have an influence on the attention skills and consequently the quality of an individual's sport performance (Landers & Arent, 2001).

Anxiety is considered by Spielberg (1989) as an emotional reaction that consist of tension and nervousness feelings, worried thoughts, and physiological changes. Anxiety is a common emotional state experienced by athletes at all levels of performance (Ford et al., 2017). Anxiety includes two

related but distinguished aspects: trait anxiety and state anxiety. The first one is the relatively stable and unchanging disposition to experience this feeling, whereas the second one is transitory, it changes over time (Spielberg, 1989). Eysenck and Calvo (1992) found that state anxiety is generally associated with a weak efficiency in processing under test conditions, so people who experience high level of anxiety use more processing resources than low-anxiety people. Furthermore, the effects of state anxiety on performance effectiveness depend on the availability and utilisation of additional resources, as well as on task demands on working memory. In general, there are contradictory results about the influence of anxiety on the sport performance: some studies have reported that anxiety can improve the sport performance, instead others found that anxiety can interfere with it (Jones, 1995; Ford et al., 2017).

Anger was defined by Spielberger (1985) as an emotional state that consists of feelings that vary in intensity with associated activation or arousal of the autonomic nervous system. It is an emotional state that frequently comes out due to stress in competitions (Isberg, 2000). Indeed, there is a difference between anger as a state, which means an emotional reaction, and anger as a trait, which means a proneness to experience anger. Some studies found that some athletes could use anger as a facilitator of energy that can be exploited in challenging situations to compensate for a temporary lack of resources; however, for some athletes anger can interfere with focus and perception of control, hindering sport performance (Ruiz & Hanin, 2011). Woodman and colleagues (2009) showed in their study that athletes' performance from the physical point of view was significantly greater in condition of anger, findings in line with Lazarus's research (2000), according to which anger can facilitate sport performance if the required skill is like action tendency associated to anger. Brunelle and collaborators (1999) showed that anger is accepted as a fundamental part in the sport performance, and it is generally encouraged for being enhanced.

Lazarus (2000) considered happiness and joy as positive emotion. They just differ in intensity: in fact, joy refers to an extremely intense emotional state, whereas happiness has a lower intensity. As Woodman and colleagues (2009) showed, happiness is not associated with the performance on the cognitive task. McCarthy (2011) highlighted in his research that these positive emotions are associated with attributes and behaviours, including optimism, resilience, self-confidence, commitment, and self-esteem. All these characteristics play an important role in successful sport performance. Therefore, emotions influence many important psychological and physiological processes that have an impact on the sport performance (Janelle et al., 2020).

In the digital space, most Internet users need to convey their facial expressions and feelings through what are known as emojis: these are visual representations of an emotion, object, or symbol used in computer-mediated communication (CMC) (Bai, Qi Dan, Mu & Yang, 2019; Da Costa, 2019; Bellis, 2020). They are used widely in social media, text, email, and instant chat apps such as WhatsApp as a pictorial substitute for body language gestures in electronic environments. CMC is in contrast with the face-to-face communication form: in fact, in the first one there is a greater difficulty in understanding other's emotions while typing a message, due to the lack of eye contact and incapacity to directly observe the non-verbal language. This difficulty can be overcome thanks to the possibility to include emoticon or emoji in the messages. Emoticons are symbols composed of punctuation marks that reproduce a facial expression, that is to say graphic representations of facial expressions, a true language that transcends cultural barriers as it conveys certain meanings without the need for a common language (Abdullah, 2019). Emoji are standardized set of small images able to represent almost everything of the everyday life, starting from smiling faces to international flags or foods

(Eisner et al., 2016). So, emoji are graphic representations that often include facial cues (Rodrigues et al., 2017). Today, emoji have become a popular option for anchoring communication got widespread especially in social media and in instant messaging app over the last decade. In our study we focused our attention on emoji, thanks to their versatility, expressiveness, and potential in representing emotional states. Emoji can have several purposes; Emoji can enrich messages with emotional information (Huang et al., 2008), in fact people can express specific emotional states and reinforce the content of the message through them. Even if emoticons and emoji have not many differences, the last ones are considered more expressive and semantically richer (Chen et al., 2017), as well as aesthetically better and more concrete than the first ones (Rodrigues et al., 2017). Emoji have different purposes: firstly, they can compensate for the absence of the non-verbal communication in the social media and in the instant messaging app (Weiß et al., 2020). Moreover, emoji can strengthen the meaning of the message and they are able to enrich the messages with further information, necessary to the comprehension of the message (Skovholt et al., 2014), for example to change the general tone of the message (Cramer et al., 2016). Emoji can give information about people's mood and intentions (Aritajati, 2020), they can also have an impact on how the person using them is perceived. Beattie and colleagues (2020) find in their research that the messages including emoji, and people using them, were perceived more attractive and socially interesting, they were perceived also more competent and believable than people who did not use them. In addition, emoji can make a conversation less impersonal (Miller et al. 2016). It is interesting to notice the impact that emoji can have on the recipient as well. Aritajati (2020), in fact, found in his research that receiving a message/review with positive emoji was able to decrease frustration in the reader and encourage the recipient to face the review as useful and constructive.

Regarding the differences on the use of emoji, several authors (Gallud et al., 2018; An et al., 2018; Koch et al., 2022; Prada et al. 2018) focused their attention on variables as age, gender, and culture. Regarding the age, there are conflicting results. For example, Gallud and colleagues (2018) found that younger people would use emoticons/emoji more than older people; instead, An and collaborators (2018) found no significant differences in emoji use by people of different ages. Indeed, it seems that younger people prefer to use emoji representing emotion or facial expression, however older people prefer to use neutral emoji or emoji representing objects and people (Koch et al., 2022). Regarding the gender, women use more frequently emoji than males (Prada et al., 2018) and women vary more in their use (Koch, 2022). In addition, there are many differences between different cultures: in principle, a different culture results in a different way to express emotion and to get and understand emotional information; for example, the thumbs-up emoji, interpreted as a sign of approval in Western countries, has the same meaning in Russia as the middle finger in Western cultures (Santoli, 2019).

In this study, we focused on the use of emoji in the sporting community, in order to express emotions and opinions and to better understand the interlocutor. Yüce and collaborators (2021) have already highlighted that emoji may be used to communicate and engage with fans; however, some studies (Barry, 2021; Meijer, 2021) have shown that using emoji caused a significant decrease in the number of likes and retweets in particular conditions (when emoji replaced a written word in a post), and that emoji didn't impact the company's image.

The aim of this study is to investigate how the presence and use of emoji in a text message may affect some emotional reactions of people (athletes vs. non-athletes) and their decision-making process. Therefore, the purpose is to understand the impact of emoji at a communicative, emotional, and

choice level, in situations of requests, invitations among at sport and non-sports people. Specifically, it was expected that receiving during training a smile emoji, rather than the thumbs up, would increase the respondent's propensity to comply with a request, to participate in an experiential activity, reducing the emotional impact resulting from receiving a negative response. Moreover, athletes are expected to exhibit greater psychological well-being, sense of self-efficacy, better perception of their bodies, and greater awareness of their body feelings, compared with non-athletes, in line with different studies (Liu et al., 2014; Ekeland et al., 2015). In this perspective, sport can become a resource for everyone.

2. Materials and Methods

2.1 Participants

100 Italian subjects took part in the present study. Regarding the Italian region of origin, 65% of the sample lives in Calabria, 14% in Lombardy, 8% in Piedmont, 7% in the Marche region, 2% in Lazio and 2% in Sicily. 75 subjects (75%) are athletes, 25 subjects (25%) not. The athletes' sample is composed by 47 (47%) women and 28 (28%) men, while the non-athletes' sample is composed by 15 (15%) women and 10 (10%) men. The age of the participants ranged from 18 to 64 years ($M_{age} = 36$ years; $SD = 11.31$). 30 (30%) subjects are married or living together, 68 (68%) individuals are celibate/maiden, 2 subjects are separated/divorced. 42 (42%) participants have finished the university, 44 (44%) are graduated at high school, 9 people have a postgraduate degree, and 5 (5%) subjects have completed their middle school diploma. In general, 75 (75%) individuals practice sports activities. 62 (62%) subjects practice non-professional sport, 17 (17%) participants practice competitive activities, 21 (21%) individuals practice no sport activities. Majority in the sample (27,5 participants, 27.5%) have been practicing sport for at least 5 years. Moreover, 53,7 (53.7%) participants can balance and combine the sport activities with school and/or work regularly twice a week, 20 (20%) subjects at least once a week, 10,5 (10.5%) individuals occasionally at least once per month; the remainder of the sample can combine sport less than once per month (5,3 subjects – 5.3%) or they had to move near the place where they train (3,2 subjects – 3.2%) or they had the opportunity to continue to train till they started to study or they struggled (1,1 subjects – 1.1%) or they hardly ever can practice sport (1,1 subjects – 1.1%) or they practice sport as a professional work (1,1 subjects – 1.1%). 25 (25%) individuals practice sport twice a week, 29 (29%) persons practice sport three times a week and 12 (12%) subjects practice sport four times a week. The height of the participants ranged from 1 meter and 69 centimetres to 1 meter and 91 centimetres ($M_{height} = 1$ meter and 72 centimetres; $SD = 9.85$). The weight of the subjects ranged from 45 kg to 107 kg ($M_{weight} = 70.36$ kg; $SD = 17.61$). Each workout for 49 (49%) subjects of the sample lasts two hours, for 34 (34%) persons it lasts less than one hour, for 12 (12%) individuals it does not last long at all, for 3 (3%) subjects it lasts three hours, and finally for 2 (2%) participants it lasts more than three hours. The intensity of the sport activities, following the WHO/ACSM indication are: 40% intense (sport activity requiring an intense physical effort, resulting in a harder breathe than normal), 30% moderate (sport activity requiring a moderate physical effort, resulting in a harder breathe than normal), 8% mild (sport activity requiring a mild physical effort, resulting in a normal breathe), 4% extreme (sport activity requiring an extreme physical effort, leading to exhaustion); 10% reported no physical effort.

2.2 Procedures

All the procedures of this research are compliant with the ethical standards of the National Research Committee and the ethical principles of the Declaration of Helsinki 1964. To carry on this study, we have decided to use an online self-administered questionnaire, created thanks to the Google Forms functionality, composed by two different sections: the first one composed by the informed consent and by the socio-demographical items; the second one includes different psychological scales aimed to study different psychological variables, for example the psychological wellbeing and the life quality of the individuals, the daily physical activity, people's body image, the awareness of one's visceral and somatosensory body sensations, the sense of self-efficacy and the resilience. Indeed, 18 images of WhatsApp conversation were proposed to the sample, representing short communication between two friends playing a sport together and between a parent and a son consisting of question and answer, created based on three categories: requests, invitations, and emotion expression. The purpose of these 18 conversations picture is to evaluate the role, the perception, and the impact that emoji have an emotional and decisional level between two athletes and between an athlete and an interlocutor. The data collection started in April 2022.

2.3 Measures

Participants were asked to provide some personal details, such as gender, age, education level, marital status, as well as weight and height.

The Italian Short-Version of the International Physical Activity Questionnaire (IPAQ), created by Manocci and colleagues (2012), was used to investigate the type and the quantity (in terms of minutes/hours) of training usually made by people. The Italian Short-Version is composed by 7 items and subjects should answer thinking of all their everyday physical activities, for instance during free time, while moving from a place to another and during home activities or gardening. This allows the individual to be classified as active or sedentary. To evaluate the intensity of the physical effort, MET (Metabolic Equivalent) was used as unit of measurement. A MET unit is defined as the resting metabolic rate, which is the amount of oxygen consumed at rest while sitting (with a value of 3.5 ml O₂/kg/min or 4.184 kJ/(kgh)), so every physical activity can be expressed as a multiple of this value, through a conversion table (Jetté et al., 1990).

The Body Image Dimensional Assessment (BIDA), created by Segura-García and collaborators (2012), is a questionnaire used to evaluate the self-perception of the body image. The BIDA is composed by four figural stimuli and four items, that allow to evaluate the body dissatisfaction, sexual body dissatisfaction, the comparative body dissatisfaction, and so the final body dissatisfaction index (BDI). The subject had to answer to the four items using a numerical scale composed of four (from 1.8 to 5.2, with range 3.5 numerical figures). The four items are the following: 1) "How do you think you are at the moment?"; 2) "What is your ideal body shape?"; 3) "Which is the most attractive shape for the opposite gender?"; 4) "How are most people of your gender and age like?". The aim of this questionnaire is to assess how much body image's subject fits the ideal and desired body.

The Self Awareness Questionnaire (SAQ), by Longarzo and colleagues (2015), was used to evaluate the self-awareness about body feeling, regarding physical pain, vitality, social activities and general health. So the purpose of this questionnaire is to collect information related to the visceral and somatosensory body sensations. This scale is composed by 35 items structured basing on Likert scale with five points (0=never; 1=sometimes; 2= often; 3= very often; 4= always).

The Who Five Well Being Index (WHO-5) is used to assess the psychological well-being and the individuals' life quality. Beck's version (1998) has been used and it is composed by 5 items structured basing on Likert scale with six points (from 0=never to 5=always).

Then, 18 WhatsApp chat images of text messages, created ad hoc, were presented to the participants, they are images of short communications, composed by a question and an answer between a parent and a daughter/son (9 images), and between two friends (9 images). These 18 images are grouped according to three purposes:

- 1) Request (the subject makes a request to his/her interlocutor, receiving different answers: answer without emoji, just thumbs-up emoji or answer + smile emoji; three chat images are about parent and son/daughter conversations, whereas the other three chat images about two friends' conversation). For each type of answer, participants were asked how parent and friend were prone to satisfy the received request, scoring on a scale from 0 = None to 4 = Very much.
- 2) Invitation (the subject invites his/her interlocutor to do something or to go somewhere, receiving different answers: answer without emoji, just thumbs-up emoji or answer + smile emoji; three chat images are about parent and son/daughter conversations, whereas the other three chat images about two friends' conversation). For each type of answer, participants were asked how parent and friend were happy about the received invitation, scoring on a scale from 0 = None to 4 = Very much.
- 3) Expression of a state of mind after an argument (the subject asks his/her interlocutor if he/she feels bad about their previous argument, receiving different answers: answer without emoji, just thumbs-up emoji or answer + smile emoji; three chat images are about parent and son/daughter conversations, whereas the other three chat images about two friends' conversation). For each type of answer, participants were asked if parent and friend got offended for the argument, scoring on a scale from 0 = None to 4 = Very much.

At the end, the General Self Efficacy Scale (GSES), by Jerusalem and Schwarzer (1981) and translated in Italian by Sibilia and colleagues (1995), was included in the form, it is used to assess and enhance in the subject the awareness about his/her own skills in managing specific experiences. It is a self-efficacy psychometric scale composed of 10 items structured basing on Likert scale with five points (1=totally disagree to 5=totally agree).

2.4.Data Analysis

Data were processed using SPSS version 20.0, released in 2009 (IBM Corp., Armonk, NY, USA). Descriptive and inferential statistics were performed. Data were subjected to Student's t-distribution; in particular, Student's t-distribution was used between the sport item ("Do you currently engage in a sporting activity on a regular basis?") and a dichotomous variable. Data were subjected to an ANOVA, which measured the difference between the different contexts: Request, Invitation and Expression of a state of mind after an argument. Independent variables were a) The exposed/displayed emoji (within subject variable); b) the sport activity (between subjects' variable); c) The interaction between the sport activity and the displayed emoji. Differences were considered statistically significant if $p < 0.05$.

3. Results

The statistical analysis aimed to highlight any significant relationships, in terms of differences in the mean scores of the psychometric batteries and the context variables (request, invitation and state of mind after an argument). Scores on the IPAQ questionnaire were used for descriptive purposes only.

3.1. Description of the different contexts

Three chats were shown in which a son/daughter makes a request to his/her parent and three chats in which the friend makes a request to her teammate. Descriptive analysis were carried out. The following table (Table 1) is a summary of the obtained results about the request context.

	0= None		1= Not Much		2= Quite		3=Much		4=Very Much	
	Friend	Parent	Friend	Parent	Friend	Parent	Friend	Parent	Friend	Parent
Answer without emoji	13%	27%	32%	28%	38%	32%	12%	11%	5%	2%
Just thumbs-up emoji	17%	18%	25%	30%	34%	35%	17%	15%	7%	2%
Answer + smile emoji	3%	4%	7%	5%	27%	31%	41%	36%	22%	24%

Table 1. Percentage of the answer results about the request context.

Descriptive analysis were carried out for the invitation context. Three chats were shown in which a daughter/son makes an invitation to his/her parent and three chats in which the friend makes an invitation to her teammate. The following table (Table 2) is a summary of the obtained results about the invitation context.

	0= None		1= Not Much		2= Quite		3=Much		4=Very Much	
	Friend	Parent	Friend	Parent	Friend	Parent	Friend	Parent	Friend	Parent
Answer without emoji	12%	13%	40%	37%	34%	26%	11%	19%	3%	5%
Just thumbs-up emoji	30%	12%	33%	31%	25%	28%	10%	21%	2%	8%
Answer + smile emoji	0%	0%	2%	6%	21%	21%	46%	37%	31%	36%

Table 2. Percentage of the answer results about the invitation context.

Descriptive analysis were carried out for the expression of a state of mind context. Three chats were shown in which a son/daughter asks his/her parent if he/she feels bad about a previous argument and three chats in which the friend asks his/her teammate if he/she feels bad about a previous argument. The following table (Table 3) is a summary of the obtained results about the expression of a state of mind context.

	0= None		1= Not Much		2= Quite		3=Much		4=Very Much	
	Friend	Parent	Friend	Parent	Friend	Parent	Friend	Parent	Friend	Parent
Answer without emoji	0%	0%	10%	12%	18%	21%	36%	31%	36%	36%

Just thumbs-up emoji	0%	0%	16%	16%	43%	40%	28%	33%	13%	11%
Answer + smile emoji	0%	0%	47%	43%	17%	26%	16%	11%	20%	20%

Table 3. Percentage of the answer results about the expression of a state of mind context.

Regarding the differences between the athletes and the non-athletes' sample at the WHO-5, BIDA, SAQ e GSES, Table 4 shows the obtained results.

		N	M	SD	p	F	df
WHO-5	Athletes	75	57.81	19.74	0.003	0.52	98
	Non-Athletes	25	43.20	22.27			
BIDA	Athletes	75	5.12	15.40	0.270	5.18	98
	Non-Athletes	25	9.64	23.19			
SAQ	Athletes	75	25.43	12.96	0.141	0.06	98
	Non-Athletes	25	30.00	13.46			
GSES	Athletes	75	38.48	7.78	0.982	0.19	98
	Non-Athletes	25	38.52	6.85			

Table 4. Comparison (Student's t-distribution) between Athletes and non-athletes' samples for WHO-5, BIDA, SAQ and GSE.

Several ANOVA analysis equal to the number of contexts questions (request, invitation and expression of a state of mind) have been carried out. The important aspects are the following:

- 1) Descriptive statistics: mean values of score of agreement to the received message are typically increasing along with the different levels: no emoji (1), thumbs up (2) and smiley (3), moreover they are cross-referenced according to the individuals being athlete or non-athlete.
- 2) Within-subject texts indicates if emoji impacts on the interlocutor's reply, if being athlete impacts on the interlocutor's reply and if being athlete has an impact on the relationship between emoji and interlocutor's reply.
- 3) Between-subject test indicates if being athlete can have an impact on the interlocutor's reply.

This analysis highlighted that according to the context, the presence or the absence of the emoji influences the interlocutor's reply. In the request context between friends, emoji is statistically significant ($p=0.000$, $F=43.43$, $df=2$). This indicates that the interlocutor's response changes according to the content of the text message. While, for the interaction between emoji and being sporty there are no statistically significant differences ($p=0.760$, $Q=0.129$, $F=0.254$). In the request context between a parent and a son/daughter, emoji is statistically significant ($p=0.000$), whereas for the interaction between emoji and being sporty there are no statistically significant differences. Moreover, athletes status seems not to be statistically significant. In the invitation context between a parent and a son/daughter, emoji is statistically significant ($p=0.000$), but there is not any interaction

between emoji and being sporty ($p=0.495$, $Q=0,374$, $F= 0,675$). Being sporty seems not to be significant. The same condition is obtained in the invitation context between friends ($p= 0.489$, $Q= 0.33$; $F= 0.692$). Finally, in the expression of a state of mind context both between friends and between a parent and a son/daughter, emoji is statistically significant ($p=0.000$) and scores turned out to be decreasing from text without emoji, thumbs up emoji, and smiley emoji. In both cases (friends and parent-son/daughter), there are no statistically significant differences neither for the interaction nor for being sporty.

4. Discussion

The aim of this study was to evaluate the impact of emoji at a communicative, emotional, and choice level in situations of requests, invitations among in athletes and not athletes. Data analysis showed that athletes and non-athletes judged the answer more positively (more likely to comply with the request/ happier with the invitation/ less offended) when there was the smiley emoji in the message, compared to the answer without the emoji and the ones containing the thumb-up emoji. Thus, it seems that emoji (smile emoji) can enrich the text messages, allowing the writer's mental and emotional state to be inferred by interlocutor. These findings are in line with most studies investigating the communicative functions of emoji (Tauch & Kanjo, 2016; Zhou et al., 2017), that highlighted how emoji impacts message interpretation, making it perceived as more emotionally expressive and positive, and how, on the other hand, their absence can make a message more boring and inexpressive. The present study showed also decreasing scores in the expression of a state of mind context, from text without emoji to smile emoji: smiling emoji made the reply's perception as more accommodative. In the request context between teammates, the interaction between emoji and being athlete turns out to be weakly significant, meaning that being athlete may lead to a more positive interpretation of the smiling emoji and, consequently, the text message. However, the effects of being sporty is significant in the request context between friends, while it is not in the request context between a parent and a son/daughter. Instead, there are no statistically significant data in the invitation and expression of a state of mind contexts regarding the interaction between emoji and being sporty (and the last one as a consequence). Indeed, data analysis showed a statistically differences ($p=0.003$) between athletes and non-athletes for the WHO-5 scale, questionnaire aimed at measuring the individual's psychological well-being and quality of life. These results are in line with the several studies, that associate sport with high scores on tests measuring mood (O'Connor, 2000; O'Neal et al., 2000) and the studies that associate sport with the satisfaction for life levels (Speltini, 1991; Steptoe & Butler, 1996; Hassmen et al., 2000). Data analysis did not show statistically differences between athletes and non-athletes for the BIDA, SAQ and GSES scale.

5. Conclusions

As intuitive, there were some limitations to this study. First, the study presented was conducted in two months, with short time to collect data and analyse them. Moreover, the sample is composed of only 100 subjects, and this could be not representative. Another limitation is about the use of a Form Google to collect data; in fact, the form may have been perceived as long and some responses may also have been influenced by a reduction in the subjects' attentional level. Finally, there are few emerging research papers in the literature, so it was difficult to collect preliminary data from the literature. Despite the limitations, the work presented here offers interesting insights and suggests

implications for athletes, sporty community and for the sport psychology. Indeed, this work has its own strengths. First, the sample heterogeneity: subjects have differences about age, gender, and amount/intensity of sports activity. It could be interesting and helpful to carry out further studies in order to deepen the impact of social role and the relationship between interlocutors, understanding the different perception of a text message. It could be helpful carry out different works with a focus on the sample's age. Findings from this investigation showed that it's important to study more in details the relationship among emoticon, emoji and sport activity.

References

- Abdullah, Imran. (2019). 21 Years of emojis, could it be the first universal language for humans? <https://www.aljazeera.net/news/cultureandart/2019/7/19>
- An, J., Li, T., Teng, Y., & Zhang, P. (2018, March). Factors influencing emoji usage in smartphone mediated communications. In *International Conference on Information* (pp. 423-428). Springer, Cham.
- Aritajati, C. (2020). *The Role of Emojis in Generating and Responding to Critiques of Creative Work* (Doctoral dissertation, The Pennsylvania State University).
- Bai, Qiyu, Dan, Qi, Mu, Zhe, & Yang, Maoken. (2019). A Systematic Review of Emoji: Current Research and Future Perspectives. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6803511/>
- Barry, E., Jameel, S., & Raza, H. (2021). Emojional: Emoji Embeddings. In *UK Workshop on Computational Intelligence* (pp. 312-324). Springer, Cham.
- Bellis, Mary. (2020). Who invented emoticons and emoji? <https://www.thoughtco.com/emoticonsand-emoji-1991412>
- Beattie, A., Edwards, A. P., & Edwards, C. (2020). A bot and a smile: Interpersonal impressions of chatbots and humans using emoji in computer-mediated communication. *Communication Studies*, 71(3), 409-427.
- Brunelle, J. P., Janelle, C. M., & Tennant, L. K. (1999). Controlling competitive anger among male soccer players. *Journal of applied sport psychology*, 11(2), 283-297.
- Cheng, L. (2017). Do I mean what I say and say what I mean? A cross cultural approach to the use of emoticons & emojis in CMC messages. *Fonseca*, (15), 199.
- Cramer, H., De Juan, P., & Tetreault, J. (2016). Sender-intended functions of emojis in US messaging. In *Proceedings of the 18th International Conference on Human-Computer Interaction with Mobile Devices and Services* (pp. 504-509).
- Da Costa, Andre. (2019). What are emojis? how and when to use them? <https://www.groovypost.com/howto/what-are-emojis-how-and-when-to-use-them/>
- Deci, E. (1980). *The psychology of self-determination*. Lexington, MA: DD Heath
- Eisner, B., Rocktäschel, T., Augenstein, I., Bošnjak, M., & Riedel, S. (2016). emoji2vec: Learning emoji representations from their description. *arXiv preprint arXiv:1609.08359*.
- Ekeland, E., Heian, F., & Hagen, K. B. (2005). Can exercise improve self-esteem in children and young people? A systematic review of randomised controlled trials. *British journal of sports medicine*, 39(11), 792-798.
- Eysenck, M. W., & Calvo, M. G. (1992). Anxiety and performance: The processing efficiency theory. *Cognition & emotion*, 6(6), 409-434.
- Ford, J. L., Ildefonso, K., Jones, M. L., & Arvinen-Barrow, M. (2017). Sport-related anxiety: current insights. *Open access journal of sports medicine*, 8, 205.
- Gallud, J. A., Fardoun, H. M., Andres, F., & Safa, N. (2018, September). A study on how older people use emojis. In *Proceedings of the XIX international conference on human computer interaction* (pp. 1-4).
- Hassmen, P., Koivula, N., & Uutela, A. (2000). Physical exercise and psychological well-being: a population study in Finland. *Preventive medicine*, 30(1), 17-25.
- Huang, A. H., Yen, D. C., & Zhang, X. (2008). Exploring the potential effects of emoticons. *Information & Management*, 45(7), 466-473.
- Isberg, L. (2000). Anger, aggressive behavior, and athletic performance. *Emotions in sport*, 1, 13-33.
- Janelle, C. M., Fawver, B. J., & Beatty, G. F. (2020). Emotion and sport performance. *Handbook of sport psychology*, 254-298.
- Jerusalem, M., & Schwarzer, R. (1981). Fragebogen zur Erfassung von "Selbstwirksamkeit. Skalen zur Befindlichkeit und Persoenlichkeit In R. Schwarzer (Hrsg.).(Forschungsbericht No. 5). Berlin: Freie Universitaet, Institut fuer Psychologie.
- Jetté, M., Sidney, K., & Blümchen, G. (1990). Metabolic equivalents (METs) in exercise testing, exercise prescription, and evaluation of functional capacity. *Clinical cardiology*, 13(8), 555-565.
- Jones, G. (1995). More than just a game: Research developments and issues in competitive anxiety in sport. *British journal of psychology*, 86(4), 449-478.
- Koch, T. K., Romero, P., & Stachl, C. (2022). Age and gender in language, emoji, and emoticon usage in instant messages. *Computers in Human Behavior*, 126, 106990.

Landers, D. M., & Arent, S. M. (2001). Unraveling conceptual and methodological confusion surrounding the arousal–performance relationship. In *International Society of Sport Psychology (ISSP), 10th World Congress of Sport Psychology* (Vol. 5, pp. 129-131). Thessaloniki, Hellas: Christodouli Publications.

Lazarus, R. S. (2000). How emotions influence performance in competitive sports. *The sport psychologist*, 14(3), 229-252.

Lazarus, R. S. (2000). How emotions influence performance in competitive sports. *The sport psychologist*, 14(3), 229-252.

Liu, Y., Wang, Z., Zhou, C., & Li, T. (2014). Affect and self-esteem as mediators between trait resilience and psychological adjustment. *Personality and individual differences*, 66, 92-97.

Longarzo, M., D'Olimpio, F., Chiavazzo, A., Santangelo, G., Trojano, L., & Grossi, D. (2015). The relationships between interoception and alexithymic trait. *The Self-Awareness Questionnaire in healthy subjects. Frontiers in psychology*, 6, 1149.

Mannocci, A., Di Thiene, D., Del Cimmuto, A., Masala, D., Boccia, A., De Vito, E., & La Torre, G. (2012). International Physical Activity Questionnaire: validation and assessment in an Italian sample. *Italian Journal of Public Health*, 7(4).

McCarthy, P. J. (2011). Positive emotion in sport performance: current status and future directions. *International Review of Sport and Exercise Psychology*, 4(1), 50-69.

Meijer, N. P. J. (2021). Sport is emoji: Experimenteel onderzoek naar de effecten van emoji-gebruik en verschillende crisisresponsstrategieën in online crisiscommunicatie bij een sportschandaal.

Miller, H. J., Thebault-Spieker, J., Chang, S., Johnson, I., Terveen, L., & Hecht, B. (2016, March). “Blissfully happy” or “ready to fight”: Varying interpretations of emoji. In *Tenth international AAAI conference on Web and social media*.

O'Connor, P. J., Raglin, J. S., & Martinsen, E. W. (2000). Physical activity, anxiety and anxiety disorders. *International Journal of Sport Psychology*, 31(2), 136-155.

O'Neal, H. A., Dunn, A. L., & Martinsen, E. W. (2000). Depression and exercise. *International Journal of Sport Psychology*.

Prada, M., Rodrigues, D. L., Garrido, M. V., Lopes, D., Cavalheiro, B., & Gaspar, R. (2018). Motives, frequency and attitudes toward emoji and emoticon use. *Telematics and Informatics*, 35(7), 1925-1934.

Rodrigues, D., Lopes, D., Prada, M., Thompson, D., & Garrido, M. V. (2017). A frown emoji can be worth a thousand words: Perceptions of emoji use in text messages exchanged between romantic partners. *Telematics and Informatics*, 34(8), 1532-1543.

Ruiz, M. C., & Hanin, Y. L. (2011). Perceived impact of anger on performance of skilled karate athletes. *Psychology of Sport and Exercise*, 12(3), 242-249.

Santoli, R. (2019). L'uso e l'impatto delle emoji all'interno della computer mediated communication dei brand: un'analisi qualitativa cross culturale.

Segura-García, C., Papaiani, M. C., Rizza, P., Flora, S., & De Fazio, P. (2012). The development and validation of the Body Image Dimensional Assessment (BIDA). *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity*, 17(3), e219-e225.

Sibilia, L., Schwarzer, R., & Jerusalem, M. (1995). Italian adaptation of the General Self-Efficacy Scale: self-efficacy generalized. *Procedia-Social and Behavioral Sciences*.

Skovholt, K., Grønning, A., & Kankaanranta, A. (2014). The communicative functions of emoticons in workplace e-mails: -. *Journal of Computer-Mediated Communication*, 19(4), 780-797.

Speltini, G. (Ed.). (1991). *Aspetti psicologici dell'attività motoria e sportiva*. CLUEB.

Spielberger, C. D. (1985). The experience and expression of anger: Construction and validation of an anger expression scale. *Anger and hostility in cardiovascular and behavioral disorders*, 5-30.

Spielberger, C.D. (1989) *Stress and anxiety in sports*. D. Hackfort and C.D. Spielberger (eds.). *Anxiety in Sports: An International Perspective*. New York: Hemisphere Publishing. pp. 3-17

Steer, R. A., Kumar, G., Ranieri, W. F., & Beck, A. T. (1998). Use of the Beck Depression Inventory-II with adolescent psychiatric outpatients. *Journal of Psychopathology and Behavioral Assessment*, 20(2), 127-137.

Steptoe, A. S., & Butler, N. (1996). Sports participation and emotional wellbeing in adolescents. *The Lancet*, 347(9018), 1789-1792.

Tauch, C., & Kanjo, E. (2016, September). The roles of emojis in mobile phone notifications. In Proceedings of the 2016 acm international joint conference on pervasive and ubiquitous computing: Adjunct (pp. 1560-1565).

Vallerand, R. J., & Blanchard, C. M. (2000). The study of emotion in sport and exercise. In Y. L. Hanin (Ed.), Emotions in sport (pp. 3-37). Champaign, IL: Human Kinetics

Walther, J. B., & D'addario, K. P. (2001). The impacts of emoticons on message interpretation in computer-mediated communication. *Social science computer review*, 19(3), 324-347.

Weiß, M., Bille, D., Rodrigues, J., & Hewig, J. (2020). Age-related differences in emoji evaluation. *Experimental Aging Research*, 46(5), 416-432.

Woodman, T., Davis, P. A., Hardy, L., Callow, N., Glasscock, I., & Yuill-Proctor, J. (2009). Emotions and sport performance: An exploration of happiness, hope, and anger. *Journal of sport and exercise psychology*, 31(2), 169-188.

Yüce, A., Aydoğdu, V., & Katırcı, H. (2021). Common Language of New Era in Sport Clubs: Emojis. *Jurnal The Messenger*, 13(1), 63-80.

Zhou, R., Hentschel, J., & Kumar, N. (2017, May). Goodbye text, hello emoji: Mobile communication on WeChat in China. In Proceedings of the 2017 CHI conference on human factors in computing systems (pp. 748-759).