

## Speaking clearly ... 10 years on

Latinjak, Alexander T.; Hatzigeorgiadis, Antonis; Comoutos, Nikos; Hardy, James

### Sport, Exercise, and Performance Psychology

DOI:

[10.1037/spy0000160](https://doi.org/10.1037/spy0000160)

Published: 01/11/2019

Peer reviewed version

[Cyswllt i'r cyhoeddiad / Link to publication](#)

*Dyfyniad o'r fersiwn a gyhoeddwyd / Citation for published version (APA):*

Latinjak, A. T., Hatzigeorgiadis, A., Comoutos, N., & Hardy, J. (2019). Speaking clearly ... 10 years on: The case for an integrative perspective of self-talk in sport. *Sport, Exercise, and Performance Psychology*, 8(4), 353-367. <https://doi.org/10.1037/spy0000160>

#### Hawliau Cyffredinol / General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

#### Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

1 **Speaking clearly ... 10 years on: The case for an integrative perspective of self-talk in**  
2 **sport**

3

4 Alexander T. Latinjak<sup>12</sup>, Antonis Hatzigeorgiadis<sup>3</sup>, Nikos Comoutos<sup>3</sup> & James Hardy<sup>4</sup>5 <sup>1</sup> University of Suffolk, UK6 <sup>2</sup> EUSES, University of Girona, Spain7 <sup>3</sup> University of Thessaly, Greece8 <sup>4</sup> IPEP, Bangor University, Wales, UK9 Paper accepted in *Sport, Exercise and Performance Psychology* on 8<sup>th</sup> January 2019.

10 Running head: AN INTEGRATIVE PERSPECTIVE OF SELF-TALK

11

12 Author Note

13 Alexander T. Latinjak, School for Psychology and Education, University of Suffolk.

14 Waterfront Building, 19 Neptune Quay, IP4 1QJ Ipswich, UK. E-mail: a.latinjak@uos.ac.uk.

15 Phone: 0044 7979343965

16 Antonis Hatzigeorgiadis, Department of Physical Education and Sport Science,

17 University of Thessaly, Karies, 42100 Trikala, Greece. E-mail: ahatzi@pe.uth.gr. Phone:

18 0030 6974009004

19 Nikos Comoutos, Department of Physical Education and Sport Science, University of

20 Thessaly, Karies, 42100 Trikala, Greece. E-mail: nzourba@pe.uth.gr. Phone: 0030

21 6947695094

22 James Hardy, Institute for the Psychology of Elite Performance (IPEP), School of

23 Sport Health &amp; Exercise Sciences, Bangor University, Bangor, LL57 2PZ, United Kingdom.

24 Email: j.t.hardy@bangor.ac.uk. Phone: 0044 1248 38 3493

25

1 **Abstract**

2 Over a decade ago, Hardy (2006) published his literature review that contained a working  
3 definition that has shaped subsequent studies about self-talk, contributing to the noticeable  
4 expansion of this research area. The rapid development of the self-talk literature in sport  
5 since then has bred the need to rethink how self-talk is conceptualized. The purpose of the  
6 present article was twofold: (a) to review how conceptualizations of self-talk and the  
7 associated research perspectives have changed during the past decade and (b) to introduce a  
8 new integrative conceptualization of sport self-talk. We identify two main developments that  
9 alter our view of what self-talk is, reinforcing the need for a new conceptualization: The  
10 identification of two distinct self-talk entities (organic self-talk and strategic self-talk); and  
11 the distinctions between spontaneous and goal-directed self-talk, as these emerged within  
12 organic self-talk. Consequently, we propose a new integrative conceptualization of self-talk.  
13 We believe that for such a conceptualization to be sufficient so as to guide future research,  
14 several attributes of self-talk ought to be recognized: the necessary and sufficient attributes  
15 that define self-talk, and important descriptive attributes, including overttness, interpretation,  
16 origins, and functions, which facilitate the understanding and the study of the self-talk  
17 phenomena.

18 *Keywords:* athletes, cognitive processes, conceptualization, private speech, thoughts

19



1 challenged and the self-talk literature has outgrown previously employed conceptualizations;  
2 accordingly, some researchers believe it timely to reconsider the conceptualizations of self-  
3 talk (e.g., Latinjak, Zourbanos, López-Ros, & Hatzigeorgiadis, 2014; Van Raalte, Vincent, &  
4 Brewer, 2016).

5         Two major developments within the self-talk literature in sport create the need to  
6 rethink the conceptualization and the classification of self-talk. The first development was the  
7 identification of two distinct self-talk entities that were initially reflected in two different  
8 research perspectives (Theodorakis, Hatzigeorgiadis, & Zourbanos, 2012). The first entity,  
9 what in our review we introduce as *organic self-talk*, previously also referred to as *automatic*  
10 (Zourbanos, Hatzigeorgiadis, Chroni, Theodorakis, & Papaianou, 2009), reflects self-talk as  
11 inherent thoughts and self-statements athletes address to themselves. Self-talk, in this case,  
12 either represents psychological processes or stems from metacognitive knowledge and skills.  
13 The second entity has been termed *strategic self-talk* (Theodorakis et al., 2012) and reflects  
14 self-talk as a deliberately employed strategy, mostly developed through interventions,  
15 involving the use of cue words or phrases to enhance performance or achieve other related  
16 outcomes (Hatzigeorgiadis, Zourbanos, Galanis, & Theodorakis, 2011; Hatzigeorgiadis,  
17 Zourbanos, Latinjak, & Theodorakis, 2014). In this case, self-talk originates through  
18 adherence to strategic plans and is based on memory. The two research entities are reflected  
19 in two important research strands of in sport psychology; understanding the psychology in  
20 sport and using psychology to improve sport experiences, respectively.

21         The second development revolved around the distinctions between spontaneous and  
22 goal-directed self-talk, as these emerged within the organic self-talk perspective (Latinjak et  
23 al., 2014). With these developments in mind, the purpose of the present article was (a) to  
24 review the multiple conceptualizations and classifications of self-talk currently in the sport-  
25 psychology literature and how these have changed during the past decade, and (b) to present a

1 new conceptualization of self-talk. In doing so, we anticipated that we would raise awareness  
2 and a more thorough appreciation of alternative conceptualizations of self-talk that, in turn,  
3 would stimulate new research questions, ultimately further developing the topic and enriching  
4 understanding. To these ends, as we reviewed aspects of the contemporary self-talk literature,  
5 we highlighted issues apt for investigation.

### 6 **Conceptualizations and classifications of self-talk**

7 In relatively recent years, four reviews of the self-talk in sport literature have been  
8 published in peer-reviewed journals. The first two focused on the effectiveness of self-talk  
9 interventions, examining the effects of strategic self-talk on sport-task performance, through  
10 a meta-analysis (Hatzigeorgiadis et al., 2011) and a systematic review (Tod, Hardy, & Oliver,  
11 2011). The third focused on organic self-talk and introduced the dual-processing perspective  
12 (Van Raalte et al., 2016). Lastly, the fourth review provided a historical look back at the  
13 empirical literature highlighting landmark self-talk studies (Hardy, Comoutos, &  
14 Hatzigeorgiadis, 2018). Uniquely, the present review attempted to address the central issue of  
15 what constitutes self-talk in an integrative way. Therefore, its purpose was to highlight the  
16 major advances regarding the conceptualizations and classifications of self-talk. Some of  
17 these advances lead us to the point where previous conceptualizations of the construct are  
18 now insufficient to encapsulate all current lines of research, thus having limited value to  
19 guide future investigation on self-talk. Our review focuses on the development of the  
20 conceptualizations and taxonomies of self-talk within the sport literature. Initially,  
21 considering the two entities of self-talk, we acknowledge the main research perspectives that  
22 have emerged over time, including studies on organic self-talk reported by athletes during  
23 their sport participation, and strategic self-talk through interventions inducing the use of self-  
24 talk plans during task performance. Regarding organic self-talk, we reviewed data-driven and  
25 theory-driven conceptualizations of self-talk based on the content and/or functions of self-

1 talk. Concerning strategic self-talk, we identified the major objectives of interventions  
2 evident in sport self-talk literature.

### 3 **Organic self-talk**

4 By the term *organic self-talk* we refer to inherent thoughts and self-statements athletes  
5 address to themselves. Other terms that have been applied in sport psychology to this type of  
6 self-talk were *automatic* (Zourbanos et al., 2009) or *spontaneous* (Van Raalte, Cornelius,  
7 Copeskey, & Brewer, 2014) self-talk. We prefer the term *organic* because it can be defined as  
8 characteristic of, pertaining to, or derived from living organisms. Further, both *automatic* and  
9 *spontaneous* could lead to misunderstandings because these terms were used in general  
10 psychology in relation to uncontrolled cognitive processes; see for example, Christoff's  
11 (2012) definition of spontaneous thinking. Hence, we opt for *organic* because both  
12 uncontrolled (i.e., thought that appear automatically or spontaneously) and controlled (i.e.,  
13 self-statements deliberately used by the athlete to self-regulate) self-addressed statements are  
14 used by athletes in relation to their sport participation. In their attempt to understand the  
15 content and the structure of organic self-talk, researchers have employed two approaches,  
16 which are outlined below: data-driven and theory-driven approaches.

17 **Data-driven approaches.** In the sport literature, the traditional view of self-talk that  
18 has emerged from inductive qualitative analyses has drawn the distinction between two  
19 strands focussing on (a) the content of self-talk, and more specifically its valence, that is,  
20 positive, neutral and negative self-statements; and (b) the function of self-talk, originally  
21 identified as motivational and instructional self-talk (Hardy, Gammage, & Hall, 2001).  
22 According to the content perspective, positive self-talk ("Good job, do it again") refers to  
23 encouragement or talk that one could be successful; negative self-talk ("Stupid mistake") is  
24 self-critical or represents an inability to succeed; whereas neutral self-talk ("I have to keep  
25 my knees bent") reflects statements that are neither positive nor negative in valence.

1 Inductive analyses of athletes' self-statements have also revealed other content-based self-  
2 talk taxonomies.

3         With regard to some of these alternative content-based aspects, some consideration of  
4 the grammatical structure of self-talk has occurred with the most recurrent theme recognizing  
5 I-statements ("I can do it") and you-statements ("You can do it"; Hardy et al., 2001; Latinjak,  
6 et al., 2014). Indeed, second person self-statements have received special attention in the  
7 social psychology literature, where it has also been investigated under the label of *fragmented*  
8 *self-talk* (Zell, Warriner, & Albarracin, 2012). Furthermore, regarding the overtness of  
9 verbalizations, authors in sport psychology have distinguished overt from covert self-talk  
10 (Hardy, Hall, & Hardy, 2005). Covert self-talk is articulated sub-vocally, as a voice inside the  
11 athletes' mind, whereas overt self-talk is articulated audibly so that others may hear what is  
12 said. In psychology, the overtness of self-talk was relevant to the distinction between private  
13 speech (i.e., addressed to oneself), and inner speech (i.e., private and covertly; Winsler,  
14 2009). Accordingly, it is the shift towards covertness that reflects the gradual internalization  
15 of private speech to form inner speech (Vygotsky, 1962).

16         When considering the functions of organic self-talk, that is, the purposes self-talk is  
17 intended to serve, two main functions have been identified: instructional, referring to  
18 statements that aid performance by triggering desired actions through proper focus of  
19 attention, correct technique, and strategy execution (Hardy et al., 1996); and motivational,  
20 referring to self-talk that increases performance by enhancing confidence, inspiring greater  
21 effort, and creating positive mood (Theodorakis, Weinberg, Natsis, Douma, & Kazakas,  
22 2000). Hardy et al. (2001) further refined these functions, distinguishing instructional self-  
23 talk functions into skills-related and strategy-related (e.g., to improve my skills, to execute  
24 plays, respectively), and motivational self-talk functions into arousal, mastery and drive (e.g.,  
25 to calm nerves, to feel prepared, to keep going, respectively). It is worth noting that the terms

1 instructional and motivational have been used less in association with organic self-talk than  
2 for identifying different self-talk interventions (Theodorakis et al., 2000). Nonetheless, it  
3 should be kept in mind that reports of motivational and instructional organic self-talk reflect  
4 the *perceived* functions of athletes' self-talk, whereas, in interventions, motivational and  
5 instructional cue-words are vocalized mechanically before, during, and/or after task  
6 execution. Because the conceptualization of motivational and instructional self-talk was  
7 presented before the recognition of this distinction, they have been applied to organic self-  
8 talk and strategic self-talk alike. Yet, there is a subtle difference between them across these  
9 perspectives, related to the self-talk entities around which they evolved; whereas within  
10 organic self-talk, self-talk *inherently possesses* specific motivational and instructional  
11 purposes, in self-talk interventions, cue words are *designed and applied to serve* specific  
12 motivational and instructional purposes.

13         Although presented here as separate features of self-talk, data-driven investigations  
14 have sometimes blurred the lines between content and functions. In the earlier years of self-  
15 talk research, positive self-talk was defined as self-talk that helps the athlete keep his/her  
16 focus of attention in the present, not on past errors or the distant future (Weinberg, 1988).  
17 Negative self-talk was described as self-talk that gets in the way because it is inappropriate,  
18 irrational, counterproductive or anxiety-producing (Theodorakis et al., 2000). Subsequently,  
19 Hardy et al. (2001) recognized the potential ambiguity between the content and the functions  
20 of self-talk that characterized such definitions and proposed to distinguish between positive  
21 and negative self-talk based on the content of statements, rather than their effect.

22         More recently, our knowledge of organic self-talk has been advanced by the  
23 development of different self-talk scales in sports (e.g., Functions of Self-Talk Questionnaire;  
24 Theodorakis, Hatzigeorgiadis, & Chroni, 2008) and general psychology (e.g., Self-Talk  
25 Scale; Brinthaupt, Hein, & Kramer, 2009). Zourbanos et al.'s (2009) investigation is an

1 example of one such development in sports. These authors developed the Automatic Self-  
2 Talk Questionnaire for Sport (ASTQS), an inclusive measure of athletes' self-talk, describing  
3 four types of positive self-talk including psych-up, confidence, instruction, and anxiety  
4 control, three types of negative self-talk, described as worries, disengagement, and somatic  
5 fatigue, and irrelevant self-talk. As is apparent, the types of positive self-talk were identified  
6 based on the content, as well as describing functions, whereas the negative types of self-talk  
7 are reflective of content alone. One way in which to remedy this discrepancy is by  
8 consideration of theory-driven approaches of self-talk, which place an emphasis on organic  
9 self-talk reflecting athletes' uncontrolled thoughts and controlled self-statements that athletes  
10 use autonomously to self-regulate within their sport.

11 **Theory-driven approaches.** A series of theoretical frameworks have had an impact  
12 on the taxonomies employed to investigate organic self-talk. Of note is the introduction of  
13 theories and models from general psychology that have brought fresh ideas to this area (e.g.,  
14 Conroy & Metzler, 2004; Latinjak et al., 2014; Oliver, Markland, Hardy, & Petherick, 2008;  
15 Van Raalte et al., 2016).

16 The introduction of thought-processing theories is of particular relevance concerning  
17 the overlaps between the content and functions of data-driven approaches of athletes' organic  
18 self-talk. Researchers in psychology and the sport sciences have repeatedly distinguished (a)  
19 processes related to cognitive control, such as conscious, operant, reflexive or goal-directed  
20 thinking, from (b) more automatic and uncontrolled processes, such as unconscious,  
21 respondent or spontaneous thinking (Christoff, 2012; Klinger, 1977). Controlled processes  
22 typically involve effort, intention, and awareness, tend to interfere with one another, and are  
23 usually experienced as self-generated thoughts; whereas automatic processes lack effort,  
24 intention, or awareness, tend not to interfere with one another, and are usually experienced as  
25 perceptions or feelings (Lieberman, 2003).

1           Of relevance to sport self-talk, Van Raalte et al. (2016) adapted Kahneman's (2011)  
2 dual-processing theory to explain the phenomenon of self-talk in sport. They identified (a) an  
3 intuitive type of self-talk (also called, System I self-talk) that comes to mind spontaneously,  
4 focuses awareness on current experiences, and represents the immediate, emotionally charged  
5 reaction to a situation ("Damn it, I messed up"); and (b) a rational type of self-talk ("Calm  
6 down, it was not entirely your fault") based on reason, which is emotionally neutral (also  
7 called, System II self-talk). Similarly, Latinjak et al. (2014) applied a distinction employed in  
8 neuropsychology studies focusing on differing thought processes and their associated brain  
9 regions (Christoff, 2013). This body of neuropsychological research differentiates between  
10 goal-directed (controlled) and undirected (uncontrolled) thought processes. When introducing  
11 distinctions made in the thought-based literature to sport-oriented self-talk, Latinjak and  
12 colleagues (Latinjak, 2018; Latinjak et al., 2014; Latinjak, Hatzigeorgiadis, & Zourbanos,  
13 2017) adapted and modified Christoff's (2012) original framework, to describe the goal-  
14 directed and spontaneous self-talk captured from athletes. In line with Christoff, Gordon and  
15 Smith (2011), goal-directed self-talk usually occurs during reasoning, problem solving, and  
16 decision making and can be described as an expressive of a controlled mental process  
17 deliberately employed towards solving a problem or making progress on a task. Further, goal-  
18 directed self-talk includes the representation of current and desired states and develops  
19 coordinated actions which attempt to convert the former to the latter (Unterrainer & Owen,  
20 2006). Conversely, spontaneous self-talk consists of unintended, non-instrumental statements  
21 that come to mind unbidden and effortlessly, which are, however, linked to the task or  
22 activity at hand and relevant contextual stimuli.

23           Closer consideration of the structure of intuitive/spontaneous and rational/goal-  
24 directed self-talk reveals specific subtypes, based on the statements content and functions,  
25 respectively. For instance, Latinjak, Corbalan-Frigola, Alcoy-Fabregas and Barker (*in press*)

1 studied the content of *spontaneous self-talk* in emotion-eliciting situations and described  
2 mainly positive, neutral and negative anticipatory self-talk and positive and negative  
3 retrospective self-talk. They also concluded that spontaneous self-talk can be viewed as a  
4 window into the athlete's mind. Spontaneous self-talk informs on athletes' performance  
5 beliefs ("I can score"), goal-orientations ("I don't want to lose"), irrational beliefs ("I have to  
6 win"), thoughts of disengagement ("I want to stop"), and attributions of success ("I am the  
7 best") and failure ("He didn't pass the ball"). With regard to controlled processes, Van  
8 Raalte, Morrey, Cornelius and Brewer (2015), analyzed the functions of marathon runners'  
9 rational self-talk during competitions. They reported that both elite and non-elite runners  
10 indicated most frequently the use of associative ("My breathing is controlled"), positive-  
11 motivational ("You can do it!"), and incentive self-talk ("I will feel much better after  
12 finishing"). Similarly, Latinjak, Masó and Comoutos (2018) examined goal-directed self-talk  
13 during the acquisition of technical skills in frisbee and revealed a large variety of self-talk  
14 functions. For an example of the specificity of goal-directed self-talk functions, consider that,  
15 before task execution, athletes provided themselves with technical instructions ("extend your  
16 arm"). However, between task executions, instructions were frequently transformed into both  
17 error descriptions ("you've bent your arm") and technical adjustment following errors  
18 ("extend your arm further"), or into technical transference following success ("keep  
19 extending your arm"). Importantly, Latinjak (2018) provided preliminary evidence regarding  
20 the dynamic interplay within the different types of organic self-talk. The results of this study  
21 showed a strong sequential link from spontaneous to goal-directed self-talk, strengthening the  
22 suggestion that intuitive thought processes, including spontaneous thinking, occur temporally  
23 before rational processes, which include goal-directed thinking (Kahneman, 2011; Van Raalte  
24 et al., 2016). Nevertheless, evidence for inverse sequencing was also revealed through reports  
25 of spontaneous self-talk following goal-directed self-talk, suggesting that goal-directed self-

1 talk might represent reason, although the voice of intuition might talk back.

2         One recent development in sport psychology is of special interest to organic self-talk  
3 and the link between spontaneous and goal-directed self-talk. Whereas strategic self-talk  
4 interventions, described in the following section, typically examine the effects of specific cue  
5 words on performance-related variables (e.g., Theodorakis et al., 2000), some more recent  
6 studies have examined the effects of reflexive interventions on improving athletes' organic  
7 self-talk (e.g., Barwood, Corbett, Wagstaff, McVeigh, & Thelwell, 2015; Latinjak, Font-  
8 Lladó, Zourbanos, & Hatzigeorgiadis, 2016). In these interventions, psychologically  
9 challenging situations are explored, including experiences of the dynamic interplay of  
10 spontaneous and goal-directed self-talk. Subsequently, past goal-directed self-talk is faced  
11 with alternative approaches to regulating spontaneous self-talk, emotions, motivation and  
12 behaviour. Interestingly, these innovative self-talk interventions in sport are based on  
13 established cognitive-behavioural research and therapy, that has a long history of self-talk  
14 used in psychological counselling. Along these lines, cognitive therapy emphasises the role of  
15 organic self-talk in influencing an individual's subsequent feelings and behaviour. According  
16 to Beck (1976), individuals are not always conscious of their spontaneous self-talk, yet, they  
17 can learn to identify it, and, therefore, become able to examine any spontaneous, emotion-  
18 filled thoughts and where useful, replace them with adaptive, goal-directed thinking (for a  
19 specific example of self-talk use in cognitive-behavioural therapy see, for instance,  
20 Gustafsson, Lundqvist, & Tod, 2017; Kendall & Treadwell, 2007).

21         Of note, the model presented by Van Raalte et al. (2016) and the framework outlined  
22 by Latinjak et al. (2014) share important communalities, such as the distinction between  
23 intuitive/spontaneous and rational/goal-directed thought processes. Thus, an integrative  
24 conceptualization should reflect the two complimentary types of self-talk. Nonetheless, there  
25 is also one relevant difference between both approaches. Van Raalte et al. distinguished

1 intuitive from rational self-talk, clustering strategic self-talk within the latter category. On the  
2 other hand, Latinjak et al. distinguished spontaneous from goal-directed self-talk within their  
3 conceptualization of organic self-talk; deeming strategic self-talk used in interventions  
4 outside their framework. Drawing from the strategic self-talk literature, it can be seen that  
5 both views are partly right, and that a combination of both perspectives is required to offer a  
6 contemporary conceptualization of self-talk.

### 7 **Strategic self-talk**

8         Whereas some studies explored athletes' self-talk via descriptive methods, the self-  
9 talk literature in sport has been dominated by studies exploring, through interventions, the  
10 effectiveness of self-talk strategies, due to its direct applied value (Galani, Hatzigeorgiadis,  
11 Comoutos, Charachousi, & Sanchez, 2018). Hatzigeorgiadis, Zourbanos et al. (2014) first  
12 described strategic self-talk as the use of cue words aiming at facilitating learning and  
13 enhancing performance, through the activation of appropriate responses. These cues are  
14 typically used just prior to, or while, performing a task, and depending on the specific  
15 function cue words were targeting, they would be described as instructional or motivational.  
16 In early research, self-talk cues would be typically determined from the researcher, whereas  
17 later and following the recommendation of Hardy (2006) arguing for more self-determined  
18 forms of self-talk, researchers would in cases provide participants the chance to select among  
19 different cues, or to develop their own self-talk strategies. As evidenced in the meta-analysis  
20 (Hatzigeorgiadis et al., 2011) and the systematic review (Tod et al., 2011), strategic self-talk  
21 interventions have proven mostly effective. Moreover, it has been identified that for the  
22 development of effective self-talk plans various parameters, such as task characteristics (e.g.  
23 motor demands), contextual factors (e.g., performance setting), and individual differences  
24 (e.g., experience/learning stage) ought to be considered (Hatzigeorgiadis, Zourbanos, et al.,  
25 2014). Also based on the seminal work of Hardy (2006), more contemporary research has

1 attempted to explore the mechanisms explaining the facilitating effects of self-talk. This goes  
2 in line with the acknowledged need to link behaviour-change techniques, including self-talk,  
3 to theoretical mechanisms of action (Michie et al., 2016). Recent reviews of this part of the  
4 literature (Galanis, Hatzigeorgiadis, Zourbanos, & Theodorakis, 2016; Hatzigeorgiadis &  
5 Galanis, 2017) have forwarded attentional and motivational interpretations for the  
6 effectiveness of self-talk strategies in sport although there is emerging behaviourally oriented  
7 data that has been more recently published (e.g., Abdoli, Hardy, Riyahi, & Farsi, 2018).

8         Other, less commonly used strategic self-talk intervention conditions have been  
9 shaped by grammatical aspects of self-statements comparing, for example, individually  
10 referenced self-talk versus group-referenced self-talk (Son, Jackson, Grove, & Feltz, 2011),  
11 or declarative versus interrogative self-talk (e.g., Van Raalte et al., 2018). Even though  
12 findings on grammatical aspects of self-talk have been inconsistent, grammar is an aspect  
13 that could potentially enhance our understanding of self-talk, thus warranting further research  
14 attention via research on both self-talk entities.

15         Having described reflexive self-talk interventions in the previous section, it would be  
16 useful for the objectives of this review to outline how these are differentiated from the more  
17 traditional self-talk interventions targeting strategic self-talk, presented in this section. Three  
18 features distinguish strategic self-talk interventions focusing on the effectiveness of cue-  
19 words, from reflexive self-talk interventions focusing on improving goal-directed self-talk,  
20 described in the previous section. First, the content of strategic self-talk interventions is  
21 typically pre-determined, whereas in reflexive self-talk interventions it emerges from the  
22 situation and it is always self-determined. Second, the moment the self-instructions are  
23 verbalized in strategic self-talk interventions is typically fixed, before or during task  
24 execution; whereas in reflexive self-talk interventions participants must decide when to use  
25 the self-instruction during the task. Third, whereas in strategic self-talk interventions

1 verbalizing self-instructions is typically prescribed, in reflexive self-talk interventions it is  
2 optional. Summarizing, strategic self-talk interventions are more mechanical as athletes are  
3 trained to use specific cues to trigger respective responses and improve performance. In  
4 reflexive self-talk interventions, athletes are encouraged to reflect on the content, timing and  
5 use of their goal-directed self-talk and develop ideas for alternative self-talk plans to cope  
6 with future challenges.

7         The distinction between strategic and reflexive self-talk interventions has important  
8 implications for our understanding of self-talk. Initially, the research paradigms, evolving  
9 around athletes' organic use of self-talk and strategic self-talk interventions, corresponded  
10 with the research entities, that is, organic and strategic self-talk. However, since both  
11 reflexive and strategic self-talk interventions have been described, this correspondence  
12 between research paradigm and research objective, has partly been overcome. Not all  
13 interventions in self-talk relate to strategic self-talk; some interventions relate to organic-  
14 goal-directed self-talk (see Figure 1).

### 15 **Summing up**

16         Hardy's (2006) work has inspired a large body of research which has significantly  
17 advanced our knowledge about self-talk. Nevertheless, knowledge has now advanced to a  
18 point where Hardy's working definition needs updating to accommodate the contemporary  
19 literature and serve as a conceptual framework for the study of self-talk in sports. Two  
20 developments in particular within the self-talk research literature reinforce the need for a new  
21 conceptualization of self-talk: (a) the identification of two distinct self-talk entities (organic  
22 self-talk and strategic self-talk); and (b) the distinctions between spontaneous and goal-  
23 directed self-talk, as these emerged within organic self-talk.

24         With regard to the most recent conceptualizations of self-talk, Zourbanos,  
25 Hatzigeorgiadis, Kolovelonis, Latinjak and Theodorakis (2016) took into consideration the

1 distinction between self-talk entities, as they described self-talk as "...statements, phrases or  
2 cue-words that are addressed to the self which might be said automatically or very  
3 strategically ..." (p. 308). Nonetheless, the distinction between the spontaneous and goal-  
4 directed aspects of organic self-talk was not considered. Van Raalte et al. (2016) within their  
5 model identified intuitive and rational self-talk (corresponding to the spontaneous and goal-  
6 directed distinction), yet they do not discuss the two different self-talk entities apparent in the  
7 self-talk literature. Although we consider both conceptualizations to be important advances in  
8 the self-talk literature, we also believe that a new integrative, extended conceptualization  
9 accommodating the contemporary sport literature could provide an effective conceptual  
10 framework for the future study of self-talk in sports.

11 Hence, we come to the second stated purpose of the present review: the proposal of a  
12 new integrative conceptualization, reflective of past studies but adequately progressive to  
13 guide future research. Based on our literature review, we believe that for such a  
14 conceptualization to be sufficient so as to guide future research, several attributes of self-talk  
15 ought to be recognized: the necessary and sufficient attributes that define self-talk and  
16 descriptive attributes discussed above, including overtness, interpretation, origins and  
17 functions which explain characteristics of self-talk relevant to the literature.

## 18 **Towards an integrative conceptualization of self-talk**

### 19 **Defining self-talk**

20 Self-talk is relatively concrete, compared to more abstract concepts, such as beliefs,  
21 emotions or goals, which, according to Bagozzi (2007) would be considered of higher  
22 complexity. Considering that a definition should only include attributes that are necessary to  
23 describe the concept, and that these attributes together should be sufficient to distinguish it  
24 from other phenomena (Podsakoff et al., 2016), self-talk is a realist concept with two  
25 individually necessary attributes, which in combination are sufficient to describe its essence:

1 (a) self-talk takes form in verbalizations and (b) in self-talk, the sender of the message is also  
2 the receiver. Therefore, self-talk can be defined as verbalizations addressed to the self  
3 (Hardy, 2006). This definition turns self-talk into what Satori (1984) identified as a basic unit  
4 of thinking, distinguished from other units such as *thoughts*, which are not necessarily  
5 verbalizations, or *verbalizations*, which are not necessarily addressed to the self.

6         With regards to verbalizations, according to Van Raalte et al. (2016), “self-talk can be  
7 defined as an act of syntactically recognisable communication” (p. 140). However, others  
8 have suggested that self-talk could be more than words. For instance, Van Raalte et al. (1994)  
9 developed the Self-Talk and Gestures Rating Scale to assess observable verbalizations or  
10 self-talk. Our argument is in line with most previous conceptualizations of self-talk which  
11 restrict the concept of self-talk to *talking*, even though at some point an athlete might use a  
12 gesture to substitute a word. This decision is based on two reasons. First, language is much  
13 more complex in structure than gestures (McNeill & Pedelty, 1995) and, therefore, requires  
14 partially different activation patterns in the brain (Glenberg & Gallese, 2011). Second,  
15 gestures and facial expressions are also a fundamental component of emotional experiences  
16 and expression (e.g., Fontaine, Scherer, Roesch, & Ellsworth, 2007). Furthermore, since  
17 human emotions are inherently social (e.g., Friesen, Devonport, Sellars, & Lane, 2013), these  
18 gestures are a part of a social, rather than intrapersonal, interaction; while self-talk is, at its  
19 core, intrapersonal, not socially oriented.

20         The second necessary attribute, directly related to the prior argument, concerns to  
21 whom the self-talk is addressed to. Intuitively, this is the self (e.g., Hardy, 2006). However,  
22 athletes might use overt self-talk for its self-representational effects in sport and so self-talk  
23 could be directed at others (Van Raalte, 2010). We agree that self-talk can affect others.  
24 Moreover, we agree that self-talk, especially goal-directed self-talk, may have an  
25 interpersonal background. Statements such as “never give up” could be picked up by the

1 athlete from the media or their parents, even many years earlier. Yet, our position is that self-  
2 talk in sport should be considered the conversation the athlete has with him/herself. If the  
3 primary purpose of the talk is self-representational, then we would consider it not self-talk.

#### 4 **Descriptive attributes of self-talk**

5         While the definition delimits self-talk as a basic unit of thinking, the conceptualization  
6 of self-talk is broader as it includes decisions on what is important about the concept (Goertz,  
7 2006). Aspects that have received significant research attention in the self-talk literature in  
8 sport and have been considered as key elements of self-talk include: dimensions of overtness  
9 (e.g., Hardy, 2006; Theodorakis et al., 2000; Van Raalte et al., 2016; Zourbanos et al., 2016),  
10 functions (e.g., Hackfort and Schwenkmezger, 1993; Hardy, 2006; Zourbanos et al., 2016),  
11 interpretative elements (e.g., Hardy, 2006), valence (Hardy, 2006), dynamic nature (Hardy,  
12 2006) and origin (e.g., Zourbanos et al., 2016). Notwithstanding the importance of these  
13 features, these should not be part of its definition, as they are not essential to what self-talk is.  
14 Nevertheless, they are important attributes for the concept of self-talk, that is, its  
15 conceptualization; as such, these are discussed below.

16         The first descriptive attribute is concerned with the articulation of self-talk. We  
17 subscribe to Theodorakis et al.'s (2000) perspective that self-talk can be articulated either out  
18 loud or as a small voice inside the head. Similarly, Hardy (2006) referred to a bipolar  
19 overtness continuum with covert self-talk (that cannot be heard by another individual)  
20 anchored at one end, and overt self-talk (said in a manner that allows another individual to  
21 hear what was said) located at the other. In the sport literature, overtness has been mostly  
22 discussed within strategic self-talk interventions. When cue words have to be repeated during  
23 task execution, the decision about overtness can be crucial for intervention effectiveness, as  
24 overt statements could establish socially available standards (Hayes et al., 1985). However,  
25 with a lack of supporting evidence in sport, changes with regard to the overtness of self-talk

1 have also occurred. While in earlier studies participants were asked to verbalize aloud the  
2 self-talk cues, in recent years, researchers, attempting to promote a more self-determined use  
3 of self-talk, shifted to allowing participants to choose between overt and covert self-talk  
4 based on participants' preferences (Hatzigeorgiadis, Zourbanos, et al., 2014).

5 Another attribute for the conceptualization of self-talk is its interpretation. Hardy  
6 (2006) in his working definition underlined that self-talk has interpretative elements  
7 associated to the content of the statements employed. While the issue of interpretation has  
8 relevance to strategic self-talk, as it is intended to trigger some response, to date it has not  
9 been extensively examined in the context of the content of organic self-talk (see Hardy, Hall,  
10 & Alexander, 2001 for an exception). Van Raalte et al. (2014) did report that ratings made by  
11 participants about their organic self-talk could be distinguished from those made by  
12 researchers (see also, Latinjak et al., 2017). They recommended that researchers ought to  
13 employ methods for coding organic self-talk that involve participant self-categorization,  
14 arguing that the interpretative element of self-talk is only accessible by those who said the  
15 statements. Consequently, we align with Hardy's initial position that the content of self-talk  
16 has interpretative elements, which researchers should keep in mind when interpreting or  
17 categorizing the content of self-talk.

18 One of the main attributes of this review, that has received considerable attention in  
19 the recent literature, involves the origins of self-talk. A graphical representation of distinct  
20 self-talk entities related to the origins of self-talk are presented in Figure 1. Research on the  
21 two entities of self-talk, organic and strategic self-talk, is reflected in the different approaches  
22 that have been used to study them (Theodorakis et al., 2012; Van Raalte, 2010). The former  
23 describes self-talk as it occurs, whereas the latter enables insight into the effects of specific  
24 strategies in sport psychology research and applied practice. Hence, to reflect the distinct  
25 entities of self-talk (a cognitive process and predetermined verbalizations based on a strategic

1 plan) and to parsimoniously accommodate previous research in the new integrative  
2 conceptualization of self-talk, the distinction between organic and strategic self-talk ought to  
3 be acknowledged. The former is part of a string of research aimed to understand the  
4 psychology in sport, and the latter belongs to research on the use of psychology to improve  
5 sport performance.

6       Two important considerations ought to be kept in mind when distinguishing organic  
7 from strategic self-talk. First, the difference between both lies within their origins, and is,  
8 therefore, independent to the content of self-statements. A statement such as *calm down* can  
9 be either organic, when it is the result of an ongoing rational cognitive process deliberately  
10 employed to solve a problem in a specific situation (e.g., avoiding to talk back insultingly to  
11 the referee), or strategic, if the athlete follows a predetermined plan that consists of repeating  
12 cue words at specific moments to trigger an appropriate response (e.g., deep breathing).  
13 Second, statements developed through strategic self-talk interventions can become organic  
14 after the intervention. That is because athletes' metacognitive knowledge is built through  
15 different experiences, such as coach instructions, information picked up in the media or, less  
16 commonly, self-talk interventions (Efklides, 2014). If the athlete reflects on the cue words  
17 used in the strategic intervention, then these may become part of his/her metacognitive  
18 knowledge and be used organically some time after the intervention (Brick, MacIntyre, &  
19 Campbell, 2016). Hence, if the athlete internalizes a phrase, he/she learned during an  
20 intervention, and decides, autonomously, to use that statement to solve a problem at hand,  
21 then this self-talk is clearly organic.

22       Concerning research, these considerations ought to be kept in mind to avoid  
23 misinterpreting strategic self-talk as goal-directed self-talk in studies in organic self-talk. For  
24 example, in a study inquiring into athletes' self-talk following a competition, a response such  
25 as *move on* could be classified by the researcher as organic, when this may have been part of

1 a predetermined strategic self-talk plan. To avoid misinterpretation in such instances, the  
2 design, either quantitative or qualitative, should allow the participants to identify the type of  
3 reported self-talk. This is currently not the case, and, hence, in studies on organic self-talk,  
4 such as Latinjak et al. (2017), there is doubt if reported self-talk was strategic rather than  
5 organic as interpreted by the researchers. On the contrary, in studies on strategic self-talk  
6 interventions, the use of organic self-talk alongside the predetermined cue words has been  
7 introduced and is habitually explored through control questions (e.g., Hatzigeorgiadis,  
8 Galanis, Zourbanos, & Theodorakis, 2014).

9       Furthermore, fine tuning on the origins of organic self-talk, following theoretical  
10 approaches from general psychology (Christoff, 2012; Kahneman, 2011), a new integrative  
11 conceptualization needs to distinguish spontaneous from goal-directed self-talk (Figure 1).  
12 This distinction helps us to decide whether it is more important to inquire into the content  
13 (what) or the functions (purpose or sought outcomes) of self-talk. Spontaneous self-talk is  
14 formulated without intention and could be considered a window into psychological states  
15 such as emotions, performance beliefs or attributions, as it helps bring current experiences  
16 into awareness (Van Raalte et al., 2016). The implication for future research is that it is  
17 likely that content is more relevant to consider than functions when examining spontaneous  
18 self-talk. In contrast, goal-directed self-talk aims at solving problems and making progress on  
19 a task; consequently, it is the ends to which statements are formulated (i.e., functions) that is  
20 more interesting to researchers and practitioners. To illustrate, Latinjak et al. (2018) found  
21 evidence of athletes using negative reinforcement self-talk (“That was crap”) purposefully to  
22 improve their performance. It was argued that the valence (a classification based on content)  
23 of such goal-directed statements may be relatively irrelevant compared to the functions  
24 through which the statement helps the athlete to identify unfavorable situations in the  
25 environment and engage in preventative or problem-solving related action.

1           Following the discussion in the paragraph above, a last descriptive attribute involves  
2 what has received considerable attention in the literature: the functions of self-talk. Mainly,  
3 these were grouped into instructional and motivational in previous conceptualizations (e.g.,  
4 Hardy, 2006; Zourbanos et al., 2016), with some noticeable exceptions (see Table S1:  
5 Hackfort & Schwenkmezger, 1993). In our conceptualization, we still consider this  
6 classification relevant for strategic self-talk. However, to date, we would refrain from  
7 classifying organic self-talk with regard to its functions. Based on the developing literature  
8 (e.g., Latinjak et al., 2018; Van Raalte et al., 2015) the distinction between instructional and  
9 motivational functions seems over-simplistic. Self-talk appears to serve a number of  
10 cognitive, emotional, and behavioural functions, which still require further attention by  
11 research.

### 12 **An integrative conceptualization of self-talk**

13           Considering all previous arguments, and to help guide and organize future research, it  
14 is timely to offer a new integrative conceptualization of self-talk for sport research. Taking  
15 into account the necessary and sufficient, and descriptive attributes of self-talk, we believe  
16 that self-talk should be described as follows: Self-talk takes form in verbalizations addressed  
17 to the self, overtly or covertly, characterized by interpretative elements associated to their  
18 content; and it either (a) reflects dynamic interplays between organic, spontaneous and goal-  
19 directed, cognitive processes or (b) conveys messages to activate responses through the use of  
20 predetermined cues developed strategically, to achieve performance related outcomes.

21           Considering this conceptualization and compared with Hardy's (2006) initial  
22 definition of self-talk, certain similarities and deviations exist. First, parts of Hardy's  
23 definition refer to who the self-talk is addressed to and the interpretative element associated  
24 to the content of the statements; these remain an explicit part of our current  
25 conceptualization. Second, Hardy's ideas of a multidimensional nature are reflected in our

1 wider conceptualization, describing aspects of origin, overtness, and interpretation, but not  
2 valence. The profile of valence as a descriptive element of self-talk has lessened during the  
3 past decade. Following the advances in self-talk research, the valence should be considered  
4 an important element of spontaneous self-talk, but not of goal-directed or strategic self-talk,  
5 where the function (i.e., the outcome sought through self-talk) is of primary importance.  
6 Hardy also underlined the dynamic nature of self-talk and similarly we have stressed the  
7 interplay between the intuitive spontaneous self-talk and reactive goal-directed self-talk.

### 8 **Implications for future research**

9         The purpose of this review was to present a new conceptualization of self-talk,  
10 reflective of past studies but adequately progressive to guide future research. In doing so, we  
11 anticipated that we would stimulate new research questions, ultimately further developing the  
12 topic and enriching understanding. At this point, we would like to outline two ways in which  
13 the integrative conceptualization could meet these expectancies. Firstly, a comprehensive  
14 conceptualization would help researchers to identify and communicate through a *common*  
15 *language* what type of self-talk or self-talk intervention they focus on. This could help  
16 adopting appropriate research designs and methods, but also improve the recognisability of  
17 relevant research. To date, some research on self-talk is less known to researchers in the area  
18 of self-talk because the authors used different terms to label their variables (as it is the case,  
19 for example, for the studies by, Calmeiro, Tenenbaum, & Eccles, 2010, and, Garcia, Razon,  
20 Hristovski, Balaguer, & Tenenbaum, 2015).

21         Secondly, our description of the different conceptualizations of self-talk should  
22 eventually stimulate new research ideas. These research ideas can be grouped around the  
23 specific subtypes of self-talk (e.g., studies on spontaneous self-talk), or across self-talk types  
24 (e.g., studies on organic self-talk and strategic self-talk). First, a distinct research agenda can  
25 be identified for each area of self-talk research. On the one hand, future research should

1 inquire into variations in spontaneous self-talk as a function of individual differences, such as  
2 personality or cultural background; contextual variables, such as motivational climate or  
3 coaching behaviours, to understand coaches' role in spontaneous cognitive reactions;  
4 situational variables such as competitive circumstances and anxiety; and importantly the  
5 reciprocal relationship between spontaneous self-talk and performance. Research on goal-  
6 directed self-talk, on the other hand, might benefit from studying variations in self-talk  
7 functions as a result of personal variables (e.g., level of expertise), contextual variables (e.g.,  
8 the presence or absence of social support) and situational variables (e.g., levels of self-  
9 efficacy). Future research is also warranted to offer guidelines on how to conduct reflexive  
10 self-talk interventions in different contexts and to provide evidence on the short- and long-  
11 term effects of such interventions. In addition, a research agenda can be developed to explore  
12 the dynamic interplay between spontaneous and goal-directed self-talk, to enhance our  
13 understanding of the conversations within the athlete's mind. Finally, towards the integration  
14 of organic and strategic self-talk, research could also examine the effects of strategic self-talk  
15 interventions on organic, goal-directed, and spontaneous self-talk.

16       Regarding future research on self-talk interventions, all types of interventions can aid  
17 our understanding of the effectiveness of self-talk strategies; nevertheless, some may be more  
18 appropriate to address research questions in particular contexts. Strategic interventions are  
19 simpler, more fixed, and replicable; thus, they are best suited for more controlled settings and  
20 oriented towards basic research approaches. Less strictly defined interventions such as those  
21 proposed by the IMPACT-ST approach for developing self-talk interventions  
22 (Hatzigeorgiadis, Zourbanos, et al., 2014) allow for the involvement of the individuals, thus  
23 increasing to a degree self-determination; however, they also lead to strategic self-talk plans  
24 to be used at particular instances. Such interventions can be implemented in field to deal with  
25 fixed and specific performance issues. Finally, flexible and self-determined interventions,

1 such as reflexive self-talk interventions (Latinjak et al., 2016), are more malleable and less  
2 controlled, and are related to the improvement of metacognitive skills. These interventions  
3 aim to improve the athlete's understanding of his/her self-talk and to stimulate the planning  
4 of and reflection about the use of cognitive strategies in sport.

#### 5 **Final remarks**

6 To conclude, we adhere to Hardy's (2006) reflexion about changes in socially  
7 constructed variables. As our understanding of self-talk develops, it is extremely likely that  
8 the previous postulates will need to be reviewed, edited or replaced, just as was apparent with  
9 Hardy's position. It is because the complexity of our own existence exceeds our capability for  
10 understanding that we need concepts such as thought, emotion or self-talk. Such concepts  
11 help us to establish comprehensible domains in the tangled network of daily experiences.  
12 Furthermore, to aid clarity, the meaning of these concepts ought to be shared which requires  
13 efforts to define and describe them, as in the current manuscript. Given that science is a social  
14 endeavour in which one's ideas build upon others' previous work, the creation of  
15 theoretically sound frameworks that guide future research are of great worth as they facilitate  
16 correspondence between different studies about the same phenomenon. This is as true for  
17 self-talk as for any other construct, and, hence, we believe that the integrative  
18 conceptualization offered herein will help to understand and integrate past research, and to  
19 guide and stimulate future investigations around self-talk.

20

## References

- 1
- 2 Abdoli, B., Hardy, J., Riyahi, J.F., & Farsi, A. (2018). A closer look at how self-talk  
3 influences skilled basketball performance. *The Sport Psychologist*, 32, 9–15.  
4 <http://doi:10.1123/tsp.2016-0162>
- 5 Bagozzi, R. P. (2007). On the meaning of formative measurement and how it differs from  
6 reflective measurement: Comment on Howell, Breivik, and Wilcox (2007).  
7 *Psychological Methods*, 12, 229-237. <http://dx.doi.org/10.1037/1082-989X.12.2.229>
- 8 Barwood, M. J., Corbett, J., Wagstaff, C. R., McVeigh, D., & Thelwell, R. C. (2015).  
9 Improvement of 10-km time-trial cycling with motivational self-talk compared with  
10 neutral self-talk. *International Journal of Sports Physiology and Performance*, 10(2),  
11 166–171. <https://doi.org/10.1123/ijsp.2014-0059>
- 12 Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. New York, NY: New  
13 American Library.
- 14 Brick, N. E., MacIntyre, T. E., & Campbell, M. J. (2016). Thinking and action: a cognitive  
15 perspective on self-regulation during endurance performance. *Frontiers in*  
16 *Physiology*, 7, 159. <https://doi.org/10.3389/fphys.2016.00159>
- 17 Brinthaup, T. M., Hein, M. B., & Kramer, T. E. (2009). The self talk scale: Development,  
18 factor, analysis, and validation. *Journal of Personality Assessment*, 91, 82-92.  
19 <https://doi.org/10.1080/00223890802484498>
- 20 Calmeiro, L., Tenenbaum, G., & Eccles, D. (2010). Event-sequence analysis of appraisals  
21 and coping during trapshooting performance. *Journal of Applied Sport Psychology*,  
22 22(4), 392-407. <https://doi.org/10.1080/10413200.2010.495325>
- 23 Christoff, K. (2012). Undirected thoughts: Neural determinants and correlates. *Brain*  
24 *Research*, 1428, 51-59. <https://doi.org/10.1016/j.brainres.2011.09.060>
- 25 Christoff, K. (2013). Thinking. In K. Ochsner & S. M. Kosslyn (Eds.), *The oxford handbook*

- 1           *of cognitive neuroscience. The cutting edges 2* (pp. 318-333). Oxford, UK: Oxford  
2           University Press.
- 3   Christoff, K., Gordon, A., & Smith, R. (2011). The role of spontaneous thought in human  
4           cognition. In O. Vartanian & R. Mandel (Eds.), *Neuroscience of decision making* (pp.  
5           259-284). New York, NY: Psychological Press.
- 6   Conroy, D. E., & Metzler, J. N. (2004). Patterns of self-talk associated with different forms of  
7           competitive anxiety. *Journal of Sport and Exercise Psychology, 26*, 69-89.  
8           <https://doi.org/10.1123/jsep.26.1.69>
- 9   Efklides, A. (2014). How does metacognition contribute to the regulation of learning? An  
10          integrative approach. *Psihologijske Teme, 23*, 1-30.
- 11   Fontaine, J. R. J., Scherer, K. R., Roesch, E. B., & Ellsworth, P. C. (2007). The world of  
12          emotion is not two-dimensional. *Psychological Science, 18*, 1050-1057.  
13          <https://doi.org/10.1111/j.1467-9280.2007.02024.x>
- 14   Friesen, A. P., Devonport, T. J., Sellars, C. N., & Lane, A. M (2013). A narrative account of  
15          decision-making and interpersonal emotion regulation using a social-functional  
16          approach to emotions. *International Journal of Sport and Exercise Psychology, 11*,  
17          203-214. <https://doi.org/10.1080/1612197X.2013.773664>
- 18   Galanis, E., Hatzigeorgiadis, A., Comoutos, A., Charachousi, F., & Sanchez, X. (2018). From  
19          the lab to field: Effects of self-talk on task performance under distracting conditions.  
20          *The Sport Psychologist, 32*, 26-32. doi:10.1123/tsp.2017-0017
- 21   Galanis, E., Hatzigeorgiadis, A., Zourbanos, N., & Theodorakis, Y. (2016). Why self-talk is  
22          effective? Perspectives on self-talk mechanisms in sport. In M. Raab, P. Wylleman, R.  
23          Seiler, A.-M. Elbe & A. Hatzigeorgiadis (Eds), *Sport and exercise psychology*  
24          *research: From theory to practice*. Elsevier: London, UK.
- 25   Garcia, S., Razon, S., Hristovski, R., Balaguer, N., & Tenenbaum, G. (2015). Dynamic

- 1 stability of task-related thoughts in trained runners. *The Sport Psychologist*, 29, 302 -  
2 309. <https://doi.org/10.1123/tsp.2014-0094>
- 3 Glenberg, A. M., & Gallese, V. (2011). Action-based language: A theory of language  
4 acquisition, comprehension, and production. *Cortex*, 48, 905-922.  
5 <https://doi.org/10.1016/j.cortex.2011.04.010>
- 6 Goertz, G. (2006). *Social science concepts: A user's guide*. Princeton, NJ: Princeton  
7 University Press
- 8 Gustafsson, H., Lundqvist, C., & Tod, D. (2017). Cognitive behavioral intervention in sport  
9 psychology: A case illustration of the exposure method with an elite athlete. *Journal*  
10 *of Sport Psychology in Action*, 8, 152-162.  
11 <https://doi.org/10.1080/21520704.2016.1235649>
- 12 Hackfort, D., & Schwenkmezger, P. (1993). Anxiety. In R.N. Singer, M. Murphey, & L.K.  
13 Tennant, (Eds.). *Handbook of research on sport psychology* (pp. 328–364). New  
14 York: Macmillan.
- 15 Hardy, J. (2006). Speaking clearly: A critical review of the self-talk literature. *Psychology of*  
16 *Sport and Exercise*, 7, 81-97. <https://doi.org/10.1016/j.psychsport.2005.04.002>
- 17 Hardy, J., Comoutos, N., & Hatzigeorgiadis, A. (2018). Reflections on the maturing research  
18 literature of self-talk in sport: Contextualizing the special issue. *The Sport*  
19 *Psychologist*, 32, 1–8. <https://doi.org/10.1123/tsp.2017-0141>
- 20 Hardy, J., Gammage, K., & Hall, C. R. (2001). A description of athlete's self-talk. *The Sport*  
21 *Psychologist*, 15, 306–318. <https://doi.org/10.1123/tsp.15.3.306>
- 22 Hardy, J., Hall, C. R., & Alexander, M. R., (2001). Exploring self-talk and affective states in  
23 sport. *Journal of Sports Sciences*, 19, 469–475.  
24 <https://doi.org/10.1080/026404101750238926>
- 25 Hardy, J., Hall, C. R., & Hardy, L. (2005). Quantifying self-talk. *Journal of Sports Sciences*,

- 1           23, 905–917. <https://doi.org/10.1080/02640410500130706>
- 2 Hardy, L., Jones, G., & Gould, D. (1996). *Understanding psychological preparation for*  
3           *sport: Theory and practice of elite performers*. Chichester, UK: Jones Wiley & Sons.
- 4 Hatzigeorgiadis, A., & Galanis, E. (2017). Self-talk effectiveness and attention. *Current*  
5           *Opinion in Psychology, 16*, 138-142. <https://doi.org/10.1016/j.copsyc.2017.05.014>
- 6 Hatzigeorgiadis, A., Galanis, V., Zourbanos, N., & Theodorakis, Y. (2014). Self-talk and  
7           competitive sport performance. *Journal of Applied Sport Psychology, 26*, 82-95.  
8           <https://doi.org/10.1080/10413200.2013.790095>
- 9 Hatzigeorgiadis, A., Zourbanos, N., Galanis, E., & Theodorakis, Y. (2011). Self-talk and  
10           sport performance: A meta-analysis. *Perspectives on Psychological Science, 6*, 348-  
11           356. <https://doi.org/10.1177/1745691611413136>
- 12 Hatzigeorgiadis, A., Zourbanos, N., Latinjak, A. T., & Theodorakis, Y (2014). Self-talk. In  
13           A. Papaioannou and D. Hackfort (Eds.), *Routledge companion to sport and exercise*  
14           *psychology* (pp. 372-386). New York, NY: Routledge
- 15 Hayes, S. C., Rosenfarb, I., Wulfert, E., Munt, E. D., Korn, Z., & Zettle, R. D. (1985). Self-  
16           reinforcement: An artifact of social standard setting? *Journal of Applied Behavior*  
17           *Analysis, 18*, 201–214. <https://doi.org/10.1901/jaba.1985.18-201>
- 18 Kahneman, D. (2011). *Thinking, fast and slow*. New York, NY: Farrar, Straus, and Giroux.
- 19 Kendall, P. C., & Treadwell, K. R. (2007). The role of self-statements as a mediator in  
20           treatment for youth with anxiety disorders. *Journal of Consulting and Clinical*  
21           *Psychology, 75*(3), 380-389. DOI: 10.1037/0022-006X.75.3.380
- 22 Klinger, E. (1977). *Meaning & void: Inner experience and the incentives in people's lives*.  
23           Minneapolis, MN: University of Minnesota Press.
- 24 Latinjak, A. T. (2018). Goal-directed, spontaneous and stimulus-independent thoughts and  
25           mindwandering in a competitive context. *The Sport Psychologist, 32*, 51-59.

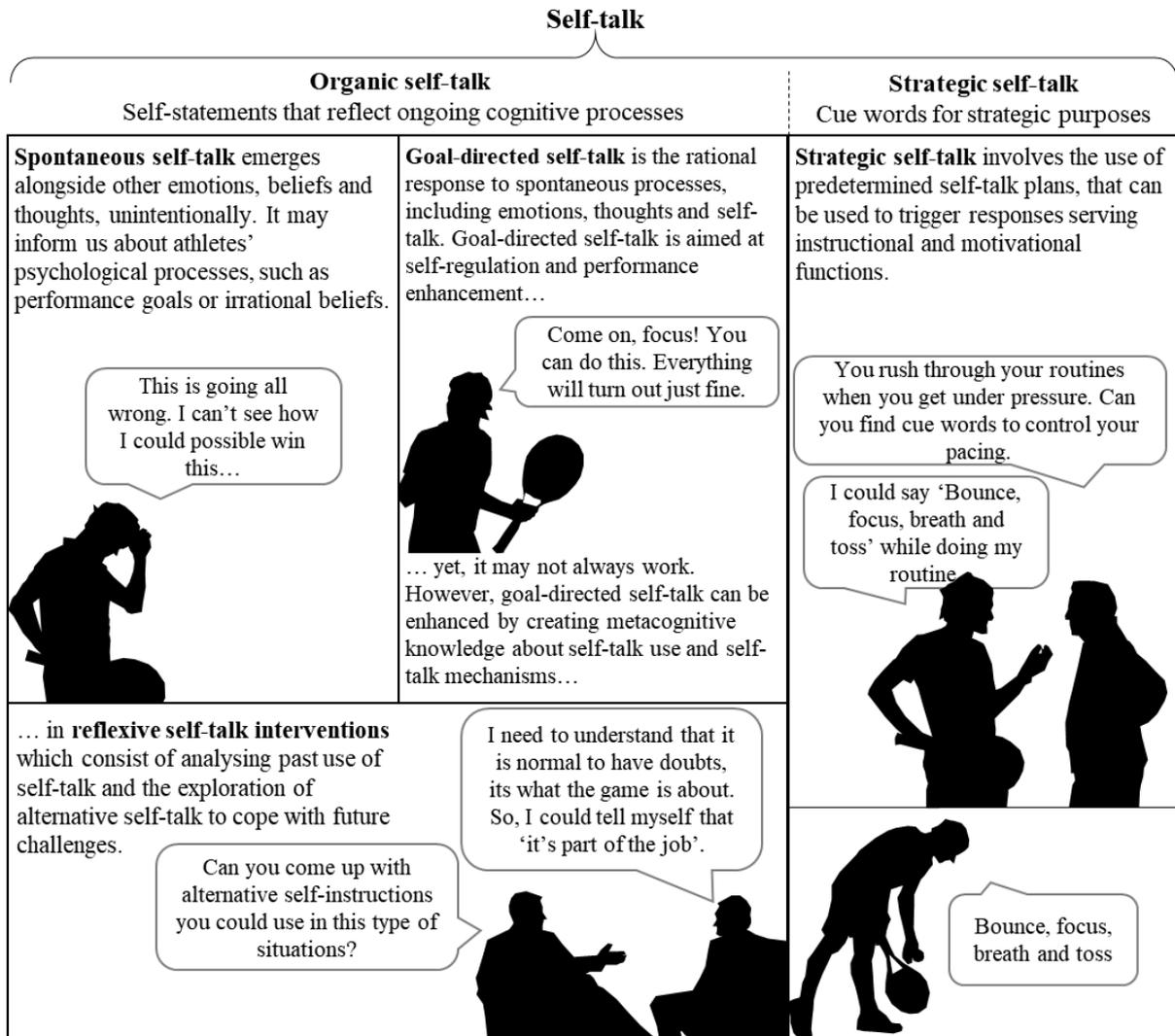
- 1 <https://doi.org/10.1123/tsp.2016-0044>
- 2 Latinjak, A. T., Corbalan-Frigola, J., Alcoy-Fabregas, P., & Barker, J. B. (*accepted for*  
3 *publication*). Spontaneous self-talk: An insight into the cognitive component of  
4 emotions in sport. *International Journal of Sport Psychology*.
- 5 Latinjak, A. T., Font-Lladó, R., Zourbanos, N., & Hatzigeorgiadis, A. (2016). Goal-directed  
6 self-talk interventions: A single-case study with an elite athlete. *The Sport*  
7 *Psychologist*, 30, 189-194. <https://doi.org/10.1123/tsp.2015-0120>
- 8 Latinjak, A. T., Hatzigeorgiadis, A., & Zourbanos, N. (2017). Goal-directed and spontaneous  
9 self-Talk in anger-and anxiety-eliciting sport-situations. *Journal of Applied Sport*  
10 *Psychology*, 29, 150-166. <https://doi.org/10.1080/10413200.2016.1213330>
- 11 Latinjak, A. T., Masó, M., & Comoutos, N. (2018). Goal-directed self-talk used during  
12 technical skill acquisition: The case of novice ultimate frisbee players. *The Sport*  
13 *Psychologist*, 32, 60-65. <https://doi.org/10.1123/tsp.2017-0047>
- 14 Latinjak, A. T., Zourbanos, N., López-Ros, V., & Hatzigeorgiadis, A. (2014). Goal-directed  
15 and undirected self-talk: Exploring a new perspective for the study of athletes' self-  
16 talk. *Psychology of Sport and Exercise*, 15, 548-558.  
17 <https://doi.org/10.1016/j.psychsport.2014.05.007>
- 18 Lieberman, M. D. (2003). Reflective and reflexive judgment processes: A social cognitive  
19 neuroscience approach. In J. P. Forgas, K. D. Williams, and W. von Hippel (Eds.),  
20 *Social judgments. Implicit and explicit processes*, (pp. 44–67). Cambridge, UK:  
21 Cambridge University Press.
- 22 McNeill, D., & Pedelty, L. (1995). Right brain and gesture. In K. Emmorey and J. Reilly  
23 (Eds), *Language, Gesture and Space* (pp. 63–86). Hillsdale, NJ: Lawrence Erlbaum  
24 Associates Inc.
- 25 Michie, S., Carey, R. N., Johnston, M., Rothman, A. J., Bruin, M. D., Kelly, M. P., &

- 1 Connell, L. E. (2016). From theory-inspired to theory-based interventions: A protocol  
2 for developing and testing a methodology for linking behaviour change techniques to  
3 theoretical mechanisms of action. *Annals of Behavioral Medicine*, 52, 501-512.  
4 <https://doi.org/10.1007/s12160-016-9816-6>
- 5 Oliver, E. J., Markland, D., Hardy, J., Petherick, C. M. (2008). The effects of autonomy-  
6 supportive and controlling environments on self-talk. *Motivation and Emotion*, 32,  
7 200–212. <https://doi.org/10.1007/s11031-008-9097-x>
- 8 Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2016). Recommendations for  
9 creating better concept definitions in the organizational, behavioral, and social  
10 sciences. *Organizational Research Methods*, 19(2), 159-203.  
11 <https://doi.org/10.1177/1094428115624965>
- 12 Sartori, G. (1984). Guidelines for concept analysis. In G. Sartori (Ed.), *Social science*  
13 *concepts: A systematic analysis* (pp. 15-85). Beverly Hills, CA: Sage Publications.
- 14 Son, V., Jackson, B., Grove, J. R., & Feltz, D. L. (2011). “I am” versus “we are”: Effects of  
15 distinctive variants of self-talk on efficacy beliefs and motor performance. *Journal of*  
16 *Sports Sciences*, 13, 1417-1424. <https://doi.org/10.1080/02640414.2011.593186>
- 17 Theodorakis, Y., Hatzigeorgiadis, A., & Chroni, S. (2008). Self-talk: It works, but how?  
18 Development and preliminary validation of the functions of Self talk Questionnaire.  
19 *Measurement in Physical Education and Exercise Science*, 12, 10-30.  
20 <https://doi.org/10.1080/10913670701715158>
- 21 Theodorakis, Y., Hatzigeorgiadis, A., & Zourbanos, N. (2012). Cognitions: Self-talk and  
22 performance. In S. Murphy (Ed.), *The oxford handbook of sport and performance*  
23 *psychology*. New York, NY: Oxford University Press.
- 24 Theodorakis, Y., Weinberg, R., Natsis, P., Douma, E., & Kazakas, P. (2000). The effects of  
25 motivational versus instructional self-talk on improving motor performance. *The*

- 1           *Sport Psychologist*, 14, 253-272. <https://doi.org/10.1123/tsp.14.3.253>
- 2    Tod, D., Hardy, J., & Oliver, E. J. (2011). Effects of self-talk: A systematic review. *Journal*  
3           *of Sport and Exercise Psychology*, 33, 666-687. <https://doi.org/10.1123/jsep.33.5.666>
- 4    Unterrainer, J. M., & Owen, A. M. (2006). Planning and problem solving: From  
5           neuropsychology to functional neuroimaging. *Journal of Physiology, Paris*, 99(4-6),  
6           308-317. <https://doi.org/10.1016/j.jphysparis.2006.03.014>
- 7    Van Raalte, J. (2010). Self-talk. In S. J. Hanrahan, and M. B. Andersen, (Eds.) *Routledge*  
8           *handbook of applied sport psychology* (pp. 510-517). New York, NY: Routledge.
- 9    Van Raalte, J. L., Brewer, B. W., Rivera, P. M., & Petitpas, A. J. (1994). The relationship  
10           between observable self-talk and competitive junior tennis players' match  
11           performances. *Journal of Sport and Exercise Psychology*, 16(4), 400-415.  
12           <https://doi.org/10.1123/jsep.16.4.400>
- 13   Van Raalte, J. L., Cornelius, A. E., Copeskey, M., Brewer, B. W. (2014). Say what? An  
14           analysis of spontaneous self-talk categorization. *The Sport Psychologist*, 28, 390-393.  
15           <https://doi.org/10.1123/tsp.2014-0017>
- 16   Van Raalte, J., Cornelius, A., Mullin, E., Brewer, B. W., Van Dyke, E., Johnson, A. J., &  
17           Iwatsuki, T. (2018). I will use declarative self-talk... or will I? Replication, extension,  
18           and meta-analyses. *The Sport Psychologist*, 32, 16-25.  
19           <https://doi.org/10.1123/tsp.2016-0088>
- 20   Van Raalte, J., Morrey, R. B., Cornelius, A., & Brewer, B. W. (2015). Self-talk of marathon  
21           runners. *The Sport Psychologist*, 29, 258-260. <https://doi.org/10.1123/tsp.2014-0159>
- 22   Van Raalte, J. L., Vincent, A., & Brewer, B. W. (2016). Self-talk: Review and sport-specific  
23           model. *Psychology of Sport and Exercise*, 22, 139-148.  
24           <https://doi.org/10.1016/j.psychsport.2015.08.004>
- 25   Vygotsky, L. S. (1962). *Thought and language*. Cambridge, MA: MIT Press.

- 1 Weinberg, R. S. (1988). *The mental advantage: Developing your psychological skills in*  
2 *tennis*. Champaign, IL: Human Kinetics.
- 3 Weinberg, R. S., Smith, J., Jackson, A., & Gould, D. (1984). Effect of association,  
4 dissociation and positive self-talk strategies on endurance performance. *Canadian*  
5 *Journal of Applied Sport Sciences*, 9, 25-32.
- 6 Winsler, A. (2009). Still talking to ourselves after all these years: A review of current  
7 research on private speech. In A. Winsler, C. Fernyhough, & I. Montero (Eds.),  
8 *Private speech, executive functioning, and the development of verbal self-regulation*  
9 (pp. 3-41). New York: Cambridge University Press.
- 10 Zell, E., Warriner, A. B., & Albarracin, D. (2012). Splitting of the mind: When the you I talk  
11 to is me and needs commands. *Social Psychology and Personality Science*, 3, 549-  
12 555. <https://doi.org/10.1177/1948550611430164>
- 13 Zourbanos, N., Hatzigeorgiadis, A., Chroni, S., Theodorakis, Y., & Papaianou, A (2009).  
14 Automatic self-talk questionnaire for sports (ASTQS): Development and preliminary  
15 validation of a measure identifying the structure of athletes' self-talk. *The Sport*  
16 *Psychologist*, 23, 233-251. <https://doi.org/10.1123/tsp.23.2.233>
- 17 Zourbanos, N., Hatzigeorgiadis, A., Kolovelonis, A., Latinjak, A. T., & Theodorakis, Y.  
18 (2016). The use of self-talk in the organization of a lesson in sport, physical education  
19 and exercise settings. In P. A. Davis (Ed.), *The Psychology of Effective Coaching and*  
20 *Management* (pp. 307-320). New York: Nova Science Publishers, Inc.
- 21

1 *Figure 1.* Outline of the main self-talk entities, and their main subtypes, in sport self-talk  
 2 literature



3