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The concept of reflection: a systematic review and thematic synthesis across professional contexts

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ABSTRACT

Reflection is widely endorsed by professional bodies and practitioners are required to document professional learning to evidence standards of professionalism. Due to the lack of a consensual definition for reflection, there is confusion regarding ‘what reflection is’. Prior to the development of an empirical evidence base that explores reflection, it is important to develop a consensually agreed concept and definition to guide experimental research. The aim of this systematic review is to understand the concept of reflection by performing a synthesis of existing conceptually oriented qualitative studies. Fourteen sources were included in a thematic synthesis that resulted in the construction of four analytical themes: cognitive, integrative, iterative and active. These themes were explored in relation to existing research and a novel definition of reflection was proposed. It is hoped that this review will encourage further enquiry into the concept and process of reflection.

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Reflection; synthesis;
concept; process; qualitative;
definition

1. Introduction

1.1. Background and context

Reflection was originally defined by Dewey (1933, p. 9) as ‘an active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends’. This definition implies that reflection is **a cognitive process involved in the evaluation of an idea or personally held belief, using available sources of evidence to inform reflective discourse.** Layers of complexity have emerged over the years due to the development of context-specific and personally meaningful descriptions of reflection (see Table 1). The variety of definitions result in confusion as to what reflection is and subsequently how to engage in meaningful and effective reflection. In fact, a study of the barriers to systematic reflection reported 1 out of 10 participants being able to identify a model of reflection indicating a general lack of participant conceptual understanding of the concept of reflection (Burt & Morgan, 2014).

The variety of definitions for reflection likely causes diverging theoretical narratives and a concomitant decrease in professional engagement with reflective practice that is evidenced in the literature (Bennett-Levy & Lee, 2014; Burt & Morgan, 2014; Haarhoff,

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Table 1. Existing definitions of reflection.

Definition of reflection	Author
'The active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends'	Dewey (1933, p. 9)
'The process of internally examining and exploring an issue of concern, triggered by an experience, and which creates and clarifies meaning in terms of self, and which results in a changed conceptual perspective'	Boyd and Fales (1983, p. 99)
'Those intellectual and affective activities in which individuals engage to explore their experiences to lead to new understandings and appreciations. It may take place in isolation or in association with others'	Boud et al. (1985, p. 19)
'The process of critically assessing the content, process, or premise(s) of our efforts to interpret and give meaning to an experience'	Mezirow (1991; p. 104)
'An active and deliberate process of critically examining practice where an individual is challenged and enabled to undertake the process of self-enquiry to empower the practitioner to realise desirable and effective practice within a reflexive spiral of personal transformation'	Duffy (2007, p. 1405)
'The process of engaging with learning and/or professional practice that provides an opportunity to critically analyse and evaluate that learning or practice'	Black and Plowright (2010, p. 246)
'The practitioner's ability to access, make sense of and learn through work experience, to achieve more desirable, effective and satisfying work'	Johns (2011, p. 23)
'A deliberate process that actively engages an individual in exploring his or her experiences. The exploration of decisions, thoughts and feelings should inform and improve practice'	Gentile (2012, p. 102)
'Reflection is a multifaceted process (not a simple product) in which a person's cognitive and emotional capacities are activated for constructive learning purposes that may result in attitudinal or behavioural changes'	Cleary et al. (2013, p. 69)
'A mental process with purpose and/or outcome in which manipulation of meaning is applied to relatively complicated or unstructured ideas in learning or to problems for which there is no obvious solution'	Moon (2013, pp. 155–156)
'A purposeful and complex process that facilitates the examination of experience by questioning the whole self and our agency within the context of practice'	Knowles et al. (2014, p. 10)
'The internal transformation of experience'	Kolb (2014, p. 49)

Thwaites, & Bennett-Levy, 2015) and anecdotally through the current author's personal conversations with sport coaches. Reflection has been endorsed by professional bodies regardless of limited research exploring the effect of reflection on professional practice (Health and Care Professions Council, 2015, 2018; The British Association of Sport and Exercise Sciences, 2018; The British Psychological Society, 2017; United Kingdom Strength and Conditioning Association, 2017). Consequently, the requirement for practitioners to submit documentary evidence of reflection-on-practice to maintain professional accreditation is based on anecdotal evidence and/or a presumption of empirical support. Therefore, it is necessary to experimentally verify the outcomes of reflecting on practice. However, it is important to firstly consensually validate the concept and definition of reflection through a theoretical synthesis aiming to construct a comprehensive yet precise understanding of reflection.

1.2. Research aims

The aim of this systematic review is to understand the concept of reflection in relation to professional practice. A systematic approach, utilising thematic synthesis (Thomas & Harden, 2008) will be used to approach the following question: How does the existing literature explain the *concept* of reflection across professional contexts?

2. Methods

2.1. Systematic search strategy

Electronic databases (PubMed, psychinfo, sport discuss and Scopus) were searched on the 29 January 2018 using the following search terms that were restricted to the title of publications: reflect* AND concept*, reflect* AND defin*, reflect* AND theor*. No restrictions were used for date of publication. The reference lists of retrieved articles were searched to identify additional publications that were relevant to the research question. During the initial search, 1301 article records were identified. Titles were screened initially to ensure the relevance of the article to the current review. If the article was identified as relevant, the abstract was screened before either rejecting or downloading the full text of the article. Following the removal of duplicate records and ascertaining the relevance of the article to the current research questions, a total of 77 article abstracts and methodologies were screened in relation to the inclusion and exclusion criteria. Studies that did not satisfy all inclusion criteria were excluded from the analysis. This resulted in 14 full-text articles being included in a final thematic synthesis (see Figure 1). These articles were uploaded into the internal sources file pathway of NVivo 11 (QSR International Pty Ltd, 2017) and analysed using thematic synthesis (Thomas & Harden, 2008). The systematic search strategy utilised the PRISMA reporting method summarised in Figure 1 (Moher, Liberati, Tetzlaff, & Altman, 2009).

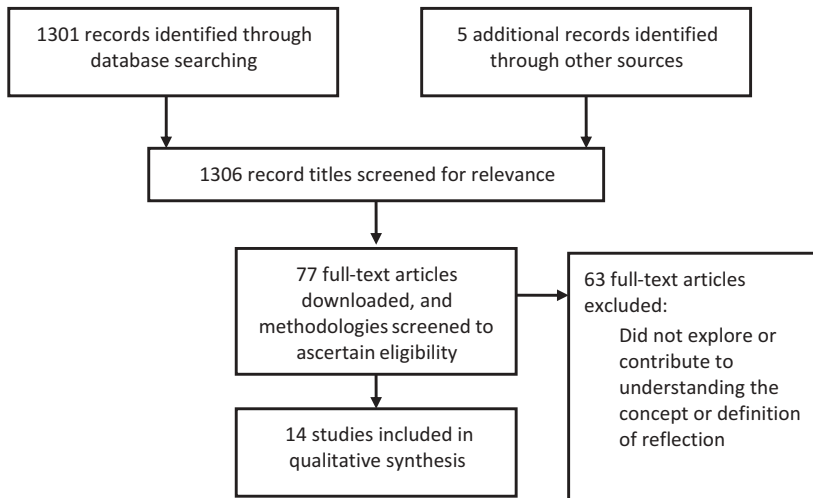


Figure 1. PRISMA flowchart describing the stages of the systematic literature search.

2.2. Inclusion and exclusion criteria

Articles that met the inclusion criteria were synthesised (see Table 2). Specifically, published qualitative articles that were reported in English and included reflection, reflective practice or reflective learning as the main topics of consideration were included. Articles must have overtly explored the concept of reflection or otherwise defined reflection or tried to understand the process of reflection to be included in the synthesis.

Table 2. Inclusion and exclusion criteria for selected studies.

Inclusion criteria	Exclusion criteria
Reflection, reflective practice or reflective learning are identified as primary topics or areas of focus within the methods of the study.	Reflection, reflective practice or reflective learning are not the primary topics or areas of focus (e.g. reflection may have been reported in the results but was not identified as a study variable in the methods of the study)
The article explores the concept of reflection and/or tries to define reflection or understand the process of reflection.	The article does not explore the concept of reflection and makes no attempt to define reflection, reflective practice or reflective learning or contribute to understanding the process of reflection.
Peer reviewed and published primary research with data reported in English or book sources that explore the concept of reflection.	Unpublished research or thesis or book sources that do not explore the concept of reflection.
Qualitative or mixed method design	Quantitative research design Data not reported in English

2.3. Justification of cross-disciplinary search strategy

Due to reflection lacking a consensual definition, an initial word frequency search was conducted on a collated list of definitions (Table 1) to facilitate an initial understanding of the common characteristics of reflection. Three conditions were used during the word frequency search conducted in NVivo 11 (QSR International Pty Ltd, 2017). Specifically, an initial search identified the number of exact word matches. A follow-up search included synonyms of identified words and was less restrictive. Finally, generalisations of identified words were included, thus creating the most inclusive word frequency count.

2.4. Thematic synthesis data extraction

Thematic synthesis was performed on all included articles according to the methods of Thomas and Harden (2008). Specifically, the lead researcher undertook the following three phases of analysis using NVivo 11 (QSR International Pty Ltd, 2017): line-by-line coding, development of descriptive themes and the generation of analytical themes (Thomas & Harden, 2008). The unit of analysis included any text under the results subheading. However, discretion was used to decide if additional text was relevant to code according to the aim and research question. Relevant information, tables describing established definitions of reflection and diagrams illustrating a process of reflection were included as additional units of analysis even if they were not included in the results. Book sources were searched to identify relevant text that explored the concept of reflection and these subsections were transcribed and uploaded to NVivo 11 (QSR International Pty Ltd, 2017) for inclusion in the thematic synthesis. Where the textual extracts cited secondary research, coded text was tabulated with primary and secondary author citations.

2.4.1. Line-by-line coding

A process of familiarisation involved repeated reading of each text to become familiar with the breadth and depth of content (Thomas & Harden, 2008). Line-by-line coding, conducted following familiarisation, ensured that every sentence was associated with at least one code (Thomas & Harden, 2008). All initial codes were assigned a label and further processes of reduction and interpretation were performed using constant comparison (Charmaz, 2014).

2.4.2. Development of descriptive themes

Following initial line-by-line coding, all text that were applied to a code were re-examined for accuracy and precision. Initial codes were grouped according to perceived similarities and remained descriptively close to the original text (Thomas & Harden, 2008). Each group was reduced and interpreted using constant comparison (Charmaz, 2014).

2.4.3. Development of analytical themes

Analytical themes were constructed by comparing descriptive themes against the aims and research questions (Thomas & Harden, 2008). Memos were written to facilitate reflection and develop coherent understanding of inter and intra-category similarities (Charmaz, 2014). The resulting groups of descriptive themes were assigned a label that summarised the relation between descriptive codes (Charmaz, 2014). This resulted in four analytical themes that are summarised in Table 3.

Table 3. Summary of analytical and descriptive themes developed from the thematic synthesis related to the characteristics of reflection (Analytical themes included in the header row with parentheses indicating the number of sources used to construct each analytical theme. Citations are included to refer the reader to the sources used to construct each descriptive theme).

Integrative (9)	Active (5)	Cognitive (13)	Iterative (9)
People learn from a variety of different sources of information (Stodter & Cushion, 2017)	Informal learning experiences are often self-directed (Black & Plowright, 2010)	Reflection involves persistent exploration of a line of enquiry (Dewey, 1933; Gilbert & Trudel, 2001; Hong & Choi, 2011; Nguyen et al., 2014; Rogers, 2001)	Reflection is cyclic with further experiences being guided by newly formed perspectives (Black & Plowright, 2010; Dewey, 1933; Gilbert & Trudel, 2001; Jay & Johnson, 2002; Nguyen et al., 2014; Rogers, 2001; Stodter & Cushion, 2017)
Critical reflection involves integration (Jay & Johnson, 2002)	Reflection involves an active conscious effort (Duffy, 2007)	Reflection is a cognitive process (Dewey, 1933; Hong & Choi, 2011; Ixer, 2016; Jay & Johnson, 2002; Jordi, 2011; Nguyen et al., 2014; Rogers, 2001)	Reflection involves continuous cycles of thought (Dewey, 1933)
Every experience is different and the weight of value of a source of information (emotions, prior learning, visual, auditory etc.) depends on each situation (Jordi, 2011)	Reflection is deliberate and therefore involves a clear intention to reflect (Hong & Choi, 2011; Rogers, 2001)	Reflection is a higher cognitive process involving purposeful meaning making (Duffy, 2007; Jay & Johnson, 2002; Jordi, 2011; Nguyen et al., 2014; Schon, 1986; Stodter & Cushion, 2017)	The use of unexpected outcomes to redefine the problem (back talk) is an evident characteristic of reflection for problem solving (Hong & Choi, 2011)
Reflection integrates multiple sources of information (Duffy, 2007; Jay & Johnson, 2002; Jordi, 2011)	Reflection is an active and deliberate practice (Goulet et al., 2016)	Reflection examines personal ways of thinking and often leads to changes in perspective (Hong & Choi, 2011; Ixer, 2016; Stodter & Cushion, 2017)	Reflection can be a rigorous or superficial process depending on the time spent reviewing previous ideas and thus developing deeper insight (Rogers, 2001)
Reflection integrates the 'new and known' (Stodter & Cushion, 2017)	Reflection is an active process that can be used to solve problems (Hong & Choi, 2011)	Automatic pre-reflective processes related to the recognition of perceived experiences is involved in reflection in-action (Ixer, 2016; Jordi, 2011; Stodter & Cushion, 2017)	It is essential that we continue to question the output of reflection (Ixer, 2016)

(Continued)

Table 3. (Continued).

Integrative (9)	Active (5)	Cognitive (13)	Iterative (9)
Reflection considers multiple forms of information (Jordi, 2011)	Reflection requires an individual's active engagement (Rogers, 2001)	Reflection is an intangible process that does not lend itself easily to measurement and scrutiny but may be tied to or framed by our values (Ixer, 2016)	Reflection for problem solving involves experience, reflection, action with an intent to analyse and construe the relation between new and prior action (Hong & Choi, 2011)
Developing schema's informs further learning and schemas adapt according to new information 'fed into' the existing cognitive structure (Dewey, 1933; Stodter & Cushion, 2017)	Reflection is selective and purposeful (Rogers, 2001)	Reflection involves a change in meaning or perspective (Black & Plowright, 2010; Dewey, 1933; Duffy, 2007; Gilbert & Trudel, 2001; Goulet et al., 2016; Hong & Choi, 2011; Jay & Johnson, 2002; Jordi, 2011; Nguyen et al., 2014; Rogers, 2001; Schon, 1986; Stodter & Cushion, 2017)	
The wide variety of available knowledge requires practitioners to be reflective to synthesise and make sense of multiple sources of information (Gilbert & Trudel, 2001)		Reflection facilitates moral thinking leading to more ethical and responsible practice (Goulet et al., 2016; Hong & Choi, 2011; Ixer, 2016)	
Reflection seeks coherence before 'widening the lens' to consider socio-political factors constraining application (Jordi, 2011)		Reflection promotes creativity and innovation (Duffy, 2007; Gilbert & Trudel, 2001; Goulet et al., 2016; Jay & Johnson, 2002; Rogers, 2001; Schon, 1986; Stodter & Cushion, 2017)	
Transformation involves the development of insight by integrating differing views (Duffy, 2007)		Reflection facilitates exploration of the self in context and thus guides professional behaviour and problem setting/solving (Ixer, 2016)	
Reflection is multi-dimensional (Black & Plowright, 2010; Nguyen et al., 2014)		Reflection develops clarity and understanding (Goulet et al., 2016)	
Reflection involves multiple functions and characteristics (Nguyen et al., 2014)		Reflection utilises multiple forms reasoning (Rogers, 2001)	
Reflection has multiple aims and potential outputs (Black & Plowright, 2010)		Reflection facilitates learning in multiple contexts (Black & Plowright, 2010; Goulet et al., 2016; Nguyen et al., 2014)	
		Ongoing reflection is empowering and develops confidence and a habit of being reflective (Black & Plowright, 2010; Dewey, 1933; Duffy, 2007; Gilbert & Trudel, 2001; Goulet et al., 2016)	

2.5. Quality assessment

Given that there are no accepted and empirically tested methods for justifying the exclusion of qualitative work from data syntheses (Thomas & Harden, 2008), the current study did not perform a quality assessment of studies included in the analysis. However, textual extracts, descriptive and analytical codes were tabulated and reported providing transparency regarding the relative contribution of each article to the final product (see Tables 3–7). Furthermore, **trustworthiness** was ensured through the consideration of the following criteria: credibility, transferability, dependability and confirmability (Nowell, Norris, White, & Moules, 2017). **Credibility** was ensured through the prolonged engagement with data using structured methods of analysis (Thomas & Harden, 2008), including constant comparison across all levels of analysis [text, initial codes, descriptive codes and analytical codes] and memo writing that documented and facilitated the careful thought processes of the researcher (Nowell et al., 2017). **Transferability and dependability** were operationalised through transparent reporting of textual data, descriptive and analytical themes providing a thick description of the data used in the analytical process (Nowell et al., 2017). **Confirmability** is achieved through the achievement of the previous three trustworthiness criteria, and the frequent use of memo writing to explore personal bias and reduce the misleading effect of bias during analysis (Nowell et al., 2017).

Table 4. Textual data extracted from existing publications used to construct the cognitive theme [secondary authors indicate references used by the primary author].

Quote	Primary authors	Secondary authors
'An interactive and interpretive skill in the analysis and solution of complex and ambiguous problems'	Cushion (2016, p. 4)	Schon (1986), Gilbert and Trudel (2001)
'reflection, as a specific form of thinking, differs from other thinking processes'	Nguyen et al. (2014, p. 1179)	
'Reflection differs from other thinking processes in that it also requires thinking aimed at one's understanding of the problem [...] rather than aimed simply at trying to solve it'	Nguyen et al. (2014, p. 1181)	Mezirow (1991)
'reflection is a cognitive process or activity'	Rogers (2001, pp. 40–41)	
'Reflection is the process by which individuals transform their meaning schemes and meaning perspectives, resulting in transformational learning'	Rogers (2001, p. 41)	Mezirow (1991)
'The seven theoretical approaches revealed several common definitional elements. These included reflection as a cognitive and affective process or activity'	Rogers (2001, p. 41)	
'Reflection prepares the individual for new experiences and leads to new skills, ideas and even new cognitive maps [...] the process leads to a new interpretation involving a change in the individual's meaning schemes or a transformation of meaning perspectives'	Rogers (2001, p. 45)	Mezirow (1991)
'Reflection is a means of identifying, scrutinising, and reconstituting the assumptions that underlie one's thoughts and actions'	Rogers (2001, p. 45)	Brookfield (1990)
'Reflection can operate at a number of levels and suggests that to achieve a second element (reimagining), one must reach the higher, more abstract levels of critical reflection'	Ryan (2012, p. 208)	
'Learning involves both the cognitive process of incorporating new knowledge into existing schemas, but it also involves the cultural conditions and opportunities for learning in the social context'	Ryan (2012, p. 209)	Kalantzis and Cope (2012)
'The idea of meaningful, transformative learning rests on the open-minded transformation and implementation of conceptions in practice, through reflective linkage with existing knowledge'	Stodter and Cushion (2017, p. 13)	Moon (2001), Mezirow (1991)

(Continued)

Table 4. (Continued).

Quote	Primary authors	Secondary authors
'Based on these views of reflection, we define reflective thinking in the context of solving design problems as conscious mental activities that examine designers' courses of action, decisions, and their inner selves in given situations throughout a design process'	Hong and Choi (2011, p. 689)	

Table 5. Textual data extracted from existing publications used to construct the integrative theme [secondary authors indicates references used by the primary author].

Quote	Primary authors	Secondary authors
'Facilitates the integration of theory and practice, bridges the theory-practice gap'	Duffy (2007, p. 1405)	Atkins & Murphy, 1993; Landeen, Byrne, & Brown, 1995; Wong, Kember, Chung, & CertEd, 1995; Rolfe, 1997; Upton, 1999
'reflective practice, it is maintained, facilitates student learning as well as the integration of information'	Goulet et al. (2016, p. 147)	Trauth-Nare and Buck (2011); Taylor (2012)
'By no means a ""last step,"" critical reflection is rather the constant returning to one's own understanding of the problem at hand. This is the process in which, as Schon (1986) describes it, one ""may then find a way of integrating, or choosing among, the values at stake in the situation"". In other words, having viewed the matter for reflection in several different ways, one makes a judgement or a choice among actions, or simply integrates what one has discovered into a new and better understanding of the problem'	Jay and Johnson (2002, p. 79)	Schon (1986)
'in spite of reflection's reputation for distilling rational knowledge from the mess of human experience, I will argue that reflective practices have the potential to do the opposite – to integrate a range of cognitive and nonconceptual elements that make up our experience and consciousness'	Jordi (2011, p. 2)	
'I would argue that this is not just a cognitive dissonance requiring an afterthought [...] but that it is instead a complex mix of bodily held feeling, memory, external stimulus, internal emotions, ideas, and new and old information that require integration and meaning making'	Jordi (2011, p. 6)	Illeris (2007)
'These dissonances that lie within the shadows of strictly cognitive reflective practices need to be brought to light. I propose that their emergence points to an inclination or yearning toward integration and meaning making and resolving the feeling that something remains unfinished and that this proclivity is intrinsic to human consciousness and experience'	Jordi (2011, p. 6)	
'reflection as a cognitive and affective process or activity that (1) requires active engagement on the part of the individual; (2) is triggered by an unusual or perplexing situation or experience; (3) involves examining one's responses, beliefs, and premises in light of the situation at hand; and (4) results in integration of the new understanding into one's experience'	Rogers (2001, p. 41)	

(Continued)

Table 5. (Continued).

Quote	Primary authors	Secondary authors
'the idea of meaningful, transformative learning rests on the open-minded transformation and implementation of conceptions in practice, through reflective linkage with existing knowledge'	Stodter and Cushion (2017, p. 13)	Mezirow (1991) Moon (2001)

Table 6. Textual data extracted from existing publications used to construct the iterative theme [secondary authors indicate references used by the primary author].

Quote	Primary authors	Secondary authors
'Participants discussed experiences that differentiated between immediate/on-the-spot reflection and delayed reflection. Such examples seemed to imply a qualitatively superior reflective process, in relation to the target of reflection, with the passage of time'	Black and Plowright (2010, p. 252)	
'The words don't say what you felt, or thought at the time, so you have to go back and re-arrange them to make it right, or make it say what you thought'	Black and Plowright (2010, p. 254)	
'An additional theme that emerged from the data was the notion of returning to the written word at a later date. This resulted in an even deeper level of reflection on their learning'	Black and Plowright (2010, p. 254)	
'Strategy generation (4), experimentation (5), and evaluation (6) comprised a subloop in a reflective conversation. For example, when addressing coaching issues, the coaches often cycled through this subloop many times'	Gilbert and Trudel (2001, p. 22)	
'Reflective thinking helps designers to increase the frequency of iterations during a design process. Iterations in a design process are frequently observed in experts' behaviours. The process of iterations involves designers being actively engaged in reflection where they review the definition of a problem repeatedly so that they can reshape the appropriate problem space and carefully re-examine their proposed solutions'	Hong and Choi (2011, pp. 690–691)	Adams, 2001; Adams, Turns, & Atman, 2003; Atman et al., 2007.
'The frequent transitions between problem definition and solution generation coincide with Schon's idea of the situation's back-talk'	Hong and Choi (2011, p. 691)	Schon (1986)
'It is the cycle of appreciations of the situations, actions, and re-appreciations that drives the iterative design process'	Hong and Choi (2011, p. 691)	Schon (1986)
'By no means a "last step," critical reflection is rather the constant returning to one's own understanding of the problem at hand'	Jay and Johnson (2002, p. 79)	
Because each author has his or her preference, we contend that a better approximation is that reflective thinking must be attentive, critical, exploratory and iterative (ACEI).	Nguyen et al. (2014, p. 1181)	
'Reflection is the process of engaging the self in attentive, critical, exploratory and iterative interactions with one's thoughts and actions, and their underlying conceptual frame, with a view to changing them and with a view on the change itself'	Nguyen et al. (2014, p. 1182)	
"The process of reflection does not always have a defined beginning and end. Thus, it should be viewed as continuous, much like an ever-expanding spiral in which challenging situations lead to reflection and ultimately to new interpretations or understanding"	Rogers (2001, p. 45)	

(Continued)

Table 6. (Continued).

Quote	Primary authors	Secondary authors
'coaches were seen to constantly work through a cycle of constructing and linking new knowledge, which was tightly bound to context-specific practice, into their existing knowledge structures'	Stodter and Cushion (2017, p. 11)	
'The choice between rejecting and adapting conceptions, as part of the reflective feedback loop, was a significant feature of the learning process'	Stodter and Cushion (2017, p. 12)	

Table 7. Textual data extracted from existing publications used to construct the active theme [secondary authors indicate references used by the primary author].

Quote	Primary author	Secondary author
'it is a disciplined way of thinking grounded in scientific enquiry'	Duffy (2007, p. 1401)	Dewey (1933)
'Most authors conceive reflective practice as a conscious, deliberate process. It is thus not an intuitive practice but tends more to be planned and pedagogically oriented'	Goulet et al. (2016, p. 146)	Kaasila & Lauriala, 2012; Ryan, 2011; Ryder, 2011
A critical component that drives individuals in the reflective process is their intent. Although others can intervene with strategies to facilitate their reflection, whether or not and how much they reflect are their own decisions.	Hong and Choi (2011, p. 689)	Boud et al., 1985
'Active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conclusions to which it tends, constitutes reflective thought. Any one of the first three kinds of thought may elicit this type; but once begun, it is a conscious and voluntary effort to establish belief upon a firm basis of reasons'	Dewey (1933, p. 9)	
The authors' general definitions also implied that reflection requires the individual's active engagement.	Rogers (2001, p. 41)	
'reflection as a cognitive and affective process or activity that (1) requires active engagement on the part of the individual'	Rogers (2001, p. 41)	
'a deliberate and intentional return to the experience'	Rogers (2001, p. 44)	Boud et al. (1985)

3. Results and general discussion

3.1. Word frequency count of existing definitions

Results identified that practice ($n = 6/7/0$), experience ($n = 5/8/0$), active ($n = 0/6/36$) were present across two conditions, while the five most frequently used words in available definitions of reflection were: cognitive ($n = 0/0/44$), active ($n = 0/6/36$), changed ($n = 0/0/36$) and process ($n = 10/12/26$) and content ($n = 0/0/23$) occurring when word inclusion was expanded to include generalisations of the identified word (See Table 8 for a descriptive summary). Reflection was therefore considered a cognitive process and as such can be generalised across professional contexts. It is unlikely that the cognitive processes involved in reflection are different according to occupational role. However, it is reasonable to assume that different occupations will require different emphasis on cognitive processes leading to sense-making in uncertain and puzzling situations. Consequently, some occupations may require practitioners to spend more time engaging in reflection. However, an occupational emphasis on reflection is unlikely to change the cognitive processes involved in reflection and therefore a cross-disciplinary search is a reasonable starting point to begin a systematic search to synthesise conceptualisations of reflection. Additionally, a conceptual exploration has not been performed in depth in any one context, which further justifies the synthesis of studies across professional contexts.

Table 8. Word frequency count of available definitions of reflection (frequency of occurrence is presented in parentheses and citations indicate sources including the identified words).

Exact matches (frequency)	Synonyms included (frequency)	Generalisations included (frequency)
Process* (10) (Black & Plowright, 2010; Boyd & Fales, 1983; Cleary et al., 2013; Duffy, 2007; Gentile, 2012; Knowles et al., 2014; Mezirow, 1991; Moon, 2013)	Process* (12) (Black & Plowright, 2010; Boyd & Fales, 1983; Cleary et al., 2013; Duffy, 2007; Gentile, 2012; Johns, 2011; Knowles et al., 2014; Mezirow, 1991; Moon, 2013)	Cognitive (44) (Black & Plowright, 2010; Boud et al., 1985; Boyd & Fales, 1983; Cleary et al., 2013; Dewey, 1933; Duffy, 2007; Gentile, 2012; Johns, 2011; Knowles et al., 2014; Kolb, 2014; Mezirow, 1991; Moon, 2013)
Practice# (6) (Black & Plowright, 2010; Duffy, 2007; Gentile, 2012; Knowles et al., 2014)	Experience# (8) (Boud et al., 1985; Boyd & Fales, 1983; Gentile, 2012; Johns, 2011; Knowles et al., 2014; Kolb, 2014; Mezirow, 1991)	Active# (36) (Black & Plowright, 2010; Boud et al., 1985; Boyd & Fales, 1983; Cleary et al., 2013; Dewey, 1933; Duffy, 2007; Gentile, 2012; Johns, 2011; Knowles et al., 2014; Mezirow, 1991; Moon, 2013)
Experience# (5) (Boyd & Fales, 1983; Johns, 2011; Knowles et al., 2014; Kolb, 2014; Mezirow, 1991)	Practice# (7) (Black & Plowright, 2010; Duffy, 2007; Gentile, 2012; Knowles et al., 2014; Moon, 2013)	Changed (36) (Black & Plowright, 2010; Boud et al., 1985; Boyd & Fales, 1983; Cleary et al., 2013; Dewey, 1933; Duffy, 2007; Gentile, 2012; Johns, 2011; Knowles et al., 2014; Kolb, 2014; Mezirow, 1991; Moon, 2013)
Learning# (4) (Black & Plowright, 2010; Cleary et al., 2013; Moon, 2013)	Learning# (7) (Black & Plowright, 2010; Boud et al., 1985; Cleary et al., 2013; Dewey, 1933; Johns, 2011; Moon, 2013)	Process* (26) (Black & Plowright, 2010; Boud et al., 1985; Boyd & Fales, 1983; Cleary et al., 2013; Dewey, 1933; Duffy, 2007; Gentile, 2012; Johns, 2011; Knowles et al., 2014; Mezirow, 1991; Moon, 2013)
Critically (3) (Black & Plowright, 2010; Duffy, 2007; Mezirow, 1991)	Active# (6) (Boud et al., 1985; Boyd & Fales, 1983; Cleary et al., 2013; Dewey, 1933; Duffy, 2007; Gentile, 2012)	Content (23) (Black & Plowright, 2010; Boud et al., 1985; Boyd & Fales, 1983; Cleary et al., 2013; Dewey, 1933; Johns, 2011; Knowles et al., 2014; Kolb, 2014; Mezirow, 1991; Moon, 2013)

*present in all conditions.

present in two condition.

3.2. Body of evidence

Twelve journal articles and two books were included in the final analysis (see Table 9). Three sources included the collection of primary data in the sport ($n = 2$) or pharmacy professions ($n = 1$) and the remaining sources were either literature reviews ($n = 9$), concept analyses ($n = 1$) or systematic reviews ($n = 1$). The professional contexts included sport ($n = 2$), education ($n = 4$), nursing ($n = 2$), pharmacy ($n = 1$), design ($n = 1$). The remaining four sources explored reflection from a general or philosophical perspective ($n = 4$). All sources used a qualitative approach thus negating the need to perform a mixed methods synthesis.

3.3. Themes

A thematic synthesis resulted in the construction of four abstract themes describing the characteristics of reflection (see Table 3): Cognitive, integrative, iterative and active. Cognition was the core theme that the additional three themes (integration, iteration and action) characterise. Specifically, through an active process of representation

Table 9. Descriptive information of studies included in a thematic synthesis.

Author	Format	Approach	Aim	Participants	Context	Data collection method
Black and Plowright (2010)	Journal article	Qualitative	Develop a theoretical understanding of reflection	26 post-graduate pharmacy students	Pharmacy	Focus group (n = 13), individual interviews (n = 18); number of participants who completed both types of data collection (n = 5)
Gilbert and Trudel (2001)	Journal article	Qualitative	Examine how model youth sport coaches learn to coach through experience	6 youth team sport coaches (soccer n = 3; ice hockey n = 3)	Sport coaching	Background interviews, documents, observations, on site interviews, interval summary interviews, and member check interviews.
Stodter and Cushion (2017)	Journal article	Qualitative	Develop an understanding of sport coaches' professional learning processes.	25 youth soccer coaches (mean age: 31.6 years; 22 male, 3 females; average years coaching: 8.5)	Sport coaching	Baseline and follow-up interviews. Semi-structured interviews (pre:3, post: 2), stimulated recall interviews (pre: 11, post: 13)
Nguyen et al. (2014)	Journal article	Qualitative	Develop a theory-informed unified definition of reflection.	N/A	General	Systematic review and exploratory thematic analysis
Duffy (2007)	Journal article	Qualitative	Clarify the concept of reflective practice	N/A	Nursing	Concept analysis (Rodgers, 1989)
Goulet et al. (2016)	Journal article	Qualitative	Examine the development of reflective practice definitions and the varied use of the term reflection within nursing and education.	N/A	Nursing and education	Literature review
Dewey (1933)	Book	Qualitative	To find a single consistent meaning of thought.	N/A	General/philosophical	Narrative review
Schon (1986)	Book	Qualitative	Not reported	N/A	General/professional	Literature review

(Continued)

Table 9. (Continued).

Author	Format	Approach	Aim	Participants	Context	Data collection method
Hong and Choi (2011)	Journal article	Qualitative	Develop a conceptual model of reflection	N/A	Design (architectural, software, engineering and instructional)	Literature review
Ixer (2016)	Journal article	Qualitative	Review the evidence of reflection that identifies a pedagogy of reflection while preserving the inductive and non-prescriptive reflective processes	N/A	General	Literature review
Jay and Johnson (2002)	Journal article	Qualitative	To describe a pedagogy of reflection while preserving the inductive and non-prescriptive reflective processes	N/A	Education	Literature review
Jordi (2011)	Journal article	Qualitative	To develop a holistic theory of reflection.	N/A	General	Literature review
Rogers (2001)	Journal article	Qualitative	Clarify ambiguity related to the concept of reflection.	N/A	Education	Literature review
Ryan (2012)	Journal article	Qualitative	Explore definitions and processes of reflection.	N/A	Education	Literature review

involving cycles of symbolic expression and re/evaluation that develops meaning through the refinement and integration of existing meaning schemes (Mezirow, 1991; Moon, 2013). Moon (2013) describes reflection as a cognitive process that is facilitated through explicit forms of representation. Additionally, Dewey (1933) originally conceptualised reflection as a cognitive process and this was supported by numerous authors who implicitly or explicitly describe reflection as involving cognition, reasoning or the exploration of meaning (Black & Plowright, 2010; Boud, Keogh, & Walker, 1985; Boyd & Fales, 1983; Cleary, Horsfall, Happell, & Hunt, 2013; Duffy, 2007; Gentile, 2012; Johns, 2011; Knowles, Gilbourne, Cropley, & Dugdill, 2014; Kolb, 2014; Mezirow, 1991). Thus, there is evident consensus that reflection is a cognitive process that appears to be facilitated by explicit forms of representation. The notion of reflection involving modes of symbolic representation is supported by numerous studies that have used written and/or verbal accounts as a method of reporting reflection on practice or collecting data on practical experience (Haigh, 2005; Knowles, Tyler, Gilbourne, & Eubank, 2006; Nash & Sproule, 2011; Whitehead et al., 2016) and by studies using methods to structure and document the reflective process (Carson, 2008; Hughes, Lee, & Chesterfield, 2009; Knowles, Gilbourne, Borrie, & Nevill, 2001; Peterson, Taylor, Burnham, & Schock, 2009; Thorpe, 2004; Tsang, 2011; Whitehead et al., 2016). Consequently, it is evident that reflection is a cognitive process that is facilitated through an overt expression of ideas.

4. Discussion

4.1. Cognitive

Reflection is a cognitive process that is used to make sense of complex and ambiguous problems (Cushion, 2016; Jones & Wallace, 2005; Schon, 1986) and is triggered by the direct perception of information that is perplexing and thus challenging to understand (Dewey, 1933; Gilbert & Trudel, 2001; Hong & Choi, 2011; Jay & Johnson, 2002; Kinchin, Cabot, & Hay, 2008; Moon, 2004; Rogers, 2001). The presence of a puzzling stimuli presupposes that the individual's existing knowledge and understanding are insufficient to make sense of experience and necessitates a careful and deliberate examination of experience through reflection. The result may be the development of explanatory hypotheses that are tested through further experience and subsequent reflection (Kolb, 2014). Thus, reflective practitioners are theoreticians of practice. This is evident in the work of Kolb (2014) who proposes that experience is abstracted through reflection into concepts and the subsequent hypotheses tested through active experimentation and further experience (Kolb, 2014). Thus, reflection used for the purposes of developing practice is necessarily situated in practice and is the method by which experience is conceptualised into actionable and testable hypotheses (Kolb, 2014).

Dewey (1933, p. 2) originally conceptualised reflection as being a purposeful and focussed act of thinking that is distinct from 'flights of fancy' and involves a coherent sequence of thoughts that are 'threaded together' leading to a conclusion. Although Dewey (1933) did not articulate the process of learning to reflect at such an early state of conceptualisation, authors have since developed methods to facilitate reflective thinking. Specifically, reflective writing represents one's ideas linguistically and creates an evolving record that is re-examined and refined over time (Black & Plowright, 2010;

Moon, 2004), creating 'layers of enquiry' that continuously evolve alongside internal representations of knowledge. Therefore, the notion of reflection being a specific form of thinking (Nguyen, Fernandez, Karsenti, & Charlin, 2014) used to make sense of ambiguity (Cushion, 2016; Jones & Wallace, 2005) and characterised by being focussed, purposeful and leading to a conclusion (Dewey, 1933) can be operationalised through reflective writing methods (Moon, 2004). Specifically, reflective writing overtly represents ideas and allows phases of re-examination and editing. Overt representation through reflective writing behaves like a filter recording only relevant and meaningful ideas that contribute to an evolving line of enquiry. Through the process of writing, ideas are refined in phases alongside one's internal representations of knowledge. Thus, changes in meaning occur inductively through the process of reflective writing, involving phases of writing, editing and re-examination. Writing therefore provides the structure and discipline for deep thought (Black & Plowright, 2010) and enables one to work persistently to construct a long-term product of enquiry that moves beyond a 'single sitting' and remains focussed and meaningful. Reflection is therefore a cognitive process that is facilitated and focussed through overt modes of representation.

4.2. Integrative

As a cognitive process that is used to make sense of ambiguity (Cushion, 2016; Jones & Wallace, 2005; Schon, 1986), reflection explores and synthesises multiple ideas and perspectives to construct a coherent narrative (Stodter and Cushion, 2017; Goulet, Larue, & Alderson, 2016; Mezirow, 1991). Reflection therefore enables the person reflecting to make sense of an experience (Kolb, 2014; Rogers, 2001) and construct espoused theories specific to a working context (Schon, 1986). The developing narrative can be examined in relation to further experience, leading to abstract yet experientially grounded interpretations (Jordi, 2011; Kolb, 2014). Long-term reflective enquiry characteristically examines new experience in relation to existing knowledge (Jay & Johnson, 2002; Jordi, 2011; Mezirow, 1991; Rogers, 2001; Stodter & Cushion, 2017), therefore providing 'a vehicle' through which practitioners explore personal subjectivity [e.g. beliefs, meaning, perspectives, emotions] in relation to direct experience, thus integrating the new and the known.

4.3. Iterative

Reflection is a cognitive process that is facilitated by overt modes of representation (Moon, 2004) allowing frequent return to one's interpretation of an experience or idea (Jay & Johnson, 2002). Because modes of representation [e.g. writing] enable frequent cycles of idea expression and re-examination, reflection does not always have a clear beginning and end but instead evolves over time (Rogers, 2001). Sustained periods of reflection, characterised by frequent re-examination of a developing narrative, leads to further integration and differentiation of internally represented meaning schemas (Mezirow, 1991) and a qualitatively superior reflective process (Black & Plowright, 2010). Persistent reflective enquiry enables one to construct and link knowledge (Stodter & Cushion, 2017) through the process of writing and the evolving product is cyclically re-examined to develop a coherent series of ideas. Reflection is therefore an

ongoing cyclic process, involving active construction of a coherent and sequentially logical narrative (Nguyen et al., 2014; Rogers, 2001).

4.4. Active

Reflection is a disciplined way of thinking (Dewey, 1933; Duffy, 2007) involving conscious and deliberate intent to make sense of an experience or idea (Dewey, 1933; Goulet et al., 2016; Hong & Choi, 2011; Mezirow, 1991). Consequently, reflection is characterised by active involvement (Dewey, 1933; Goulet et al., 2016; Rogers, 2001). As discussed above, reflection involves cycles of idea expression and re-examination that, if performed persistently, acts to refine a 'working product' of an individual's understanding. Because the process of writing makes internally represented ideas explicit (Black & Plowright, 2010; Kinchin et al., 2008), while enabling immediate or longer-term cycles of re-examination, practitioners are able to take time to integrate ideas that were previously not considered in relation to each other. The resulting insight may provide the necessary coherence to make sense of an experience or idea. Thus, reflection enables the development of new insight through the 'bringing together of ideas' in the form of an evolving narrative.

5. Working definition

Based on a systematic review of available theoretical studies, the current author proposes the following working definition that synthesises known characteristics of reflection.

Reflection is a careful examination and bringing together of ideas to create new insight through ongoing cycles of expression and re/evaluation.

6. Limitations and recommendations for further research

The current author's constructivist epistemological perspective guided the development of this thematic synthesis. The review explored the existing conceptual literature aiming to construct a consensual definition that aligns with thematically synthesised constructs that have been previously attributed to reflection. The systematic search was conducted under the premise of reflection being a cognitive process. However, this is a reasonable assumption because cognition is consistently referred to implicitly or explicitly in all available definitions of reflection explored by the current author (see Table 1). The evident similarities in the utilised data indicate consensual agreement between multiple authors of different cultural backgrounds and historical time points, thus meeting the criteria for socially constructed validity (Habermas, 1984).

Due to the inductive analytical process involved in a thematic synthesis, the resulting theoretical conceptualisation was constructed in light of the current author's comprehension of reflection. To reduce the effect of personal bias misrepresenting the results, memos were written throughout the analysis (Charmaz, 2014). These memos reflexively explored the current author's perspective in relation to the meaning derived from the data. This reduced the tendency to force predefined categories onto the data and encouraged careful

reasoning directed to the development of categories (Charmaz, 2014). However, it is important for researchers to question and ‘make sense’ of the proposed theory in accordance with individual epistemological beliefs and understanding of the emerging empirical research. Through further enquiry, it is hoped that an empirical evidence base can be developed to validate and explain the cognitive process of reflection.

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