

The edge of reason: A thematic analysis of how professional financial traders  
understand analytical decision making

**Authors:**

Irina Anderson<sup>1\*</sup>, Volker Thoma<sup>1</sup>

<sup>1</sup>University of East London, London, UK

\* Corresponding Author:

[i.anderson@uel.ac.uk](mailto:i.anderson@uel.ac.uk);

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3 **The edge of reason: A thematic analysis of how professional financial**  
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5 **traders understand analytical decision making**  
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16  
17 **Abstract**  
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22 This study uses thematic analysis to investigate accounts of Type 2 (analytical, rational and  
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24 reflective) decision-making processes in professional financial traders working in the City of  
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26 London. Previous studies have focused on using qualitative methods to examine trader  
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28 understanding of Type 1 decision-making (intuition and ‘gut feeling’). No published study has  
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30 investigated how traders view Type 2 decisions. Findings from semi-structured interviews with  
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32 14 traders revealed two overarching themes derived from four subthemes. The first  
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34 overarching theme (‘Knowledge gap’) demonstrated that traders do not find their analytical  
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36 decision-making processes as accessible as dual-process theory predicts. In particular, traders  
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38 failed to label processes such as reading research or evaluating data as analytical. In contrast,  
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40 they viewed Type 2 decisions in a ‘saviour’ role where these processes offered traders  
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42 psychological or emotional support during loss making periods. The implications of these  
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44 findings are discussed with respect to the decision-training of traders, their management, and  
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51 practice.

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56 **Keywords:** decision-making, finance, traders, dual-system  
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# The edge of reason: A thematic analysis of how professional financial traders understand analytical decision-making

“The gut-feel of the 55-year old trader is more important than the mathematical elegance of the 25-year old genius” - Alan Greenspan

## 1. Introduction

How do professional financial traders account for their analytical decisions?

Understanding how traders experience their decision-making and associated self-insights is of considerable value to society given the importance of the banking and finance sector in the global economy. Decisions taken by professional financial traders have a significant impact “not only on employees and organizations, but also shareholders, depositors, and the wider economy” (Hensman & Sadler-Smith, 2010: 51). Despite assumptions of rationality informing early economic models and trader behaviour (Fama, 1998), scholars in behavioural finance assert that those working in financial markets frequently act irrationally (Hilton, 2001; Shefrin, 2002; Shleifer, 2000; Taleb, 2004).

Decision-making models in finance have drawn on the dual-process paradigm of human cognition (e.g., Evans, 2003; Hastie & Dawes, 2010; Kahneman, 2011; Sloman, 1996). Dual-process theories (Evans, 2003, 2008, 2012; Evans & Stanovich, 2013) postulate that human thinking is characterised by two types of

1  
2 cognitive processes resulting in different judgment outcomes (Stanovich & West,  
3  
4 2000; Tversky & Kahneman, 1974), popularized as “thinking fast” or “thinking  
5  
6 slow” (Kahneman, 2011). The former is called Type 1 ‘thinking’ and is automatic,  
7  
8 fast and uncontrollable. This process works without conscious experience and is  
9  
10 effortless (de Neys, 2012). The second type of process — Type 2 — is slow,  
11  
12 analytical, reflective, conscious, deliberative and rule-based. It conforms to  
13  
14 normative models of judgement based on the assumption of perfectly rational agents  
15  
16 making decisions according to a correct standard (such as probability theory or  
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18 formal logic — the “right answer”; Baron, 2012: 577). While Type 2 processes have  
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20 been demonstrated to be normatively correct (Frederick, 2005), their use also  
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22 demands considerably more cognitive effort. Type 1 intuitive decisions, while rapid,  
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24 are, however, susceptible to the usage of heuristics. Heuristics are simple thought  
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26 mechanisms used for judgment that often rely on only one cue either from memory  
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28 or the environment. These can result in relatively accurate judgments in some  
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30 circumstances (Gigerenzer & Gaissmaier, 2011) but are usually found to be biased  
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32 (see Kahneman, 2011). These mental ‘short cuts’ and ‘rules of thumb’, can lead to  
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34 substantially suboptimal outcomes (Tversky & Kahneman, 1974), or are simply  
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36 incorrect compared to normative standards (Kahneman, 2011; Hogarth, 2005).  
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48 By interviewing fourteen professional financial traders and employing thematic  
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50 analysis (Braun & Clarke, 2006; 2012), findings revealed four thematic categories,  
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52 subsumed by two overarching emergent themes that provide insight into how  
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54 traders understand their Type 2 decision-making (Type 2, analytical, rational and  
55  
56 reflective decisions making are here referred to interchangeably). The first  
57  
58 overarching theme showed that traders demonstrated several ‘gaps’ in their  
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60 knowledge regarding what constitutes an analytical decision (the ‘Knowledge Gap’  
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2 theme). Traders had difficulty articulating, defining and demarcating the  
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4 boundaries of processes construed as ‘analysis’. Nearly all traders alluded to the  
5  
6 impossibility of complete rationality when trading, acknowledging that despite  
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8 concerted attempts, being truly analytical, rational and measured in their decision-  
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10 making was unreachable. They also expressed surprise at the presence, detail and  
11  
12 limitations of Type 2 processes they employed when making trading decisions  
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14 despite their frequent use. These findings suggest that analytical decisions remain  
15  
16 inaccessible. In addition, trades appeared to label erroneously, if at all, activities  
17  
18 which are undoubtedly analytical such as reading research, evaluating the markets  
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20 or appraising economic views. The lack of clarity in trader understanding of Type 2  
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22 decisions require more investigation than previously thought.  
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31 While traders exhibited uncertainty concerning Type 2 decisions, they nevertheless  
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33 consistently cast them in a ‘saviour’ role, that is, a process that will enable them to  
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35 prevent or recover losses when markets become turbulent. Traders have indicated  
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37 their reliance (and, in some cases, over-reliance) on technological tools (such as  
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39 spreadsheets and charts) and algorithmic ‘rules’ such as ‘if-then’ decision trees.  
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43 Some traders considered the dependable ‘saviour’ attributes of Type 2 decision-  
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45 making processes so important that they sought to remove any human intervention  
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47 from the decision-making process altogether, relying solely on rule-governed  
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49 processes of analysis (essentially, algorithmic trading). Accounts that focus on  
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51 traders’ experience of Type 2 decisions in volatile markets complement existing  
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53 literatures in trader management, behavioural finance, market trends analysis, and  
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55 economic psychology. They are also able to extend hypothetico-deductive work in  
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57 these fields and question the validity of the conceptual and theoretical basis of this  
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63 research.  
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## 2. Empirical and theoretical background

### 2.1 Traditional theoretical view on trader decision-making in banking and finance – rationality assumed

*“Neo-classical financial economics has been a prime influence on research into markets and market behaviour. [...] Within this paradigm, there are strong assumptions about investor rationality and the nature of investor preferences”* (Fenton-O’Creevy et al., 2011: 44).

Historically, academics have assumed the banking and finance field to be ‘rational’ (Gabbi & Zanotti, 2019; Hilton, 2001; Fenton-O’Creevy et al., 2011). This assumption is a dominant theoretical perspective throughout social sciences, natural sciences and other cross-disciplinary literatures (Adinolfi, 2020). Deriving from economic theory (see Eugene Fama’s work, e.g., Fama, 1998) and reinforced in dominant cultural metaphors, financial institutions and employees are viewed as epitomising analytical, rational and considered decision-making. These institutions are “driven by ‘hard’ data captured in complex computational models of risk” (Hensman & Sadler Smith, 2010, pg.51) where actors make fully informed trading decisions (Dhar & Zhu, 2006). From this perspective, professional traders are “perfectly rational”, operating in ‘perfectly efficient’ markets (Fenton-O’Creevy et al., 2005; Hilton, 2001). They make rational judgements in pursuit of maximum expected utility (Fenton-O’Creevy, et al, 2005), where the subjective value associated with an individual's trade is the statistical expectation of that individual's valuations of the outcomes of that trade (Lo & Repin, 2001). The rationality assumption encapsulated in the ‘Efficient Market Hypothesis’ *a priori* expects that

1  
2 individuals operating in this environment will correctly utilize logical and  
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4 mathematical methods in their work regardless of emotions, attitudes or previous  
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6 experience (Gabbi & Zanotti, 2019; Miller & Ireland, 2005).  
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11 Traders do appear to be capable of rationality when required to do so by researchers,  
12  
13 an observation supported by empirical insights deriving from several strands of  
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15 literature in psychology, economics and neuroscience (Gabbi & Zanotti, 2019). For  
16  
17 example, Thoma and colleagues (2015) demonstrated that professional financial  
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19 traders possess higher reflective capabilities than either non-trading bank employees  
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21 or people not working in finance (Thoma et al., 2015). In this study, traders scored  
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23 significantly higher than participants in the other two groups on the cognitive  
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25 reflection test (CRT), which is a measure of the tendency to inhibit automatic but  
26  
27 frequently false responses in reasoning tasks. A study by Shapira and Venezia  
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29 (2001) reports professional investors are less affected by the disposition effect—the  
30  
31 tendency to keep losing trades longer than profitable ones—compared to individual  
32  
33 (non-professional) investors. These tendencies were also observed by Dhar and Zhu  
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35 (2006), who confirmed that highly financially literate investors (those employed in  
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37 professional occupations) exhibited a lower disposition effect than investors who  
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39 were less financially literate.  
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## 50 51 **2.2. Contemporary theoretical view of trader decision-making in banking** 52 53 **and finance – heuristics and biases as norm** 54 55 56 57

58 Despite the prevailing belief that financial markets are rational, it is generally observed  
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60 that opportunities for in-depth analysis and reflection required for Type 2 processes tend  
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62 to be restricted in financial trading settings. Analysis and reflection appear to be rarer  
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2 than intuition (Lo & Repin, 2001) such that “the rationality of financial markets has been  
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4 one of the most hotly contested issues in the history of modern financial economics”  
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6 (Lo, Repin, Steenbarger, 2005:352). In real-life, stressful environments such as a  
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8 trading floor, traders are more likely to rely on ‘gut instinct’ rather than conscious logic,  
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10 engaging in automatic decision-making and the use of emotional cues. Conscious  
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12 deliberation is reserved for tasks of “the highest priority” (Fenton-O’Creevy, Soane,  
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14 Nicholson & Willman, 2011: 4) while instinctive responses are considered to confer  
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16 tangible advantages in situations where there is too much information, no definitive  
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18 correct answer, and where creativity is needed to find a solution quickly (Fenton-  
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24 O’Creevy, et al., 2011; Gigerenzer, 2007).  
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29 Given these observations, experimental psychologists have proceeded to build a  
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31 substantial body of knowledge demonstrating intuition, ‘gut feelings’, and biases and  
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33 heuristics in expert decision-making in general (Hardman, 2009), and, specifically, in  
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35 economic decision-making (Krawczyk & Baxter, 2020). Defined as the study of the  
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37 influence of psychology on the behaviour of financial practitioners and the subsequent  
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39 effects on markets, researchers within behavioural finance seek to explain the  
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41 observations documented above; that is, how and why markets may be inefficient  
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43 (Hilton, 2001), with a particular focus on how emotions and sentiments affect this  
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45 decision-making (Gabbi & Zanotti, 2019). This perspective proposes that irrational  
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50 tendencies are inherent in financial markets and its financial agents, a phenomenon  
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52 which is applicable in understanding the behavior of both professional organisations  
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54 (investment fund managers, traders, and dealers) and individuals (whether private  
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56 investors or fund clients).  
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63 To date, over one hundred biases (Krawczyk & Baxter, 2020) have been identified  
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2 in human decision-making, several of which appear to be particularly relevant to  
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4 professional financial traders. Hilton's early work highlighted the "Seven Deadly  
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6 Sins" of trading (2001) which include confirmation bias, optimism bias,  
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8 overconfidence, and the disposition effect. These have been expanded to include  
9  
10 other systematic biases and flaws exhibited by investors that impact their trading  
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12 outcomes (Barberis & Thaler, 2003; Shleifer, 2000). It is generally assumed that  
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14 these biases have a detrimental effect on trading performance, although some studies  
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16 have shown the opposite (Biais & Weber, 2009; Kandasamy, Garfinkel, Page,  
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18 Hardy, Critchley, Gurnell & Coates, 2016; Lo, Repin & Steenberger, 2005; Seo &  
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20 Barrett, 2007; Schunk & Betsch, 2006; Chen, Kim, Nofsinger, & Rui, 2007, Shefrin,  
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22 2002; Shleifer, 2000; see also Gärling, Kirchler, Lewis, & van Raaij, 2009, and  
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24 Hilton, 2001, for a review).

### 33 **2.3. Qualitative methods in financial trader decision-making research**

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35 Recently, researchers have adopted qualitative methods in financial trader decision-  
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37 making research. There are several reasons why these methods may improve our  
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39 understanding of this domain. Firstly, these methods function as an alternative to the  
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41 predominantly positivist, hypothetico-deductive research framework used in  
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43 behavioural finance. Research in this field has primarily been conducted from the  
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45 perspective of experimental psychology, located in 'psychology laboratories' and using  
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47 data collection techniques developed therein (Muradoglu & Harvey, 2012). This  
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49 framework, while useful, precludes an in-depth understanding of how financial traders  
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51 themselves view these concepts.  
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61 Studies using qualitative methods to understand the 'lived experience' of making  
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2 decisions in financial market settings complement and “balance” existing research.  
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4 They also provide insights into the validity of any findings emerging from the positivist  
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6 perspective (Hensman & Sadler Smith, 2010). While the experimental method has  
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8 several clear advantages for knowledge in this arena, it also has some important  
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10 limitations. Testing hypotheses under controlled conditions, as well making firm  
11  
12 assertions about causal relationships between dependent and independent variables, are  
13  
14 well-known strengths of the hypothetico-deductive framework. However, researchers  
15  
16 have argued that the laboratory settings used in behavioural finance studies are far from  
17  
18 isomorphic with the banking and finance environments (Hensman & Sadler Smith,  
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20 2010). Financial traders usually make decisions in busy, noisy, populous, and volatile  
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22 conditions; the opposite of silent and decontextualized testing ‘labs’. As such, there is a  
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24 failure to capture aspects of the environment in which these decisions are typically  
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26 made, questioning the reliability and validity of any findings.  
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37 In addition, the hypothetico-deductive method itself is reductionist. Complex  
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39 phenomena are reduced to ‘manageable’ but unrealistic, units of analysis (Fenton-  
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41 O’Creevy et al., 2011), and this reductionism can hinder more nuanced understandings  
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43 of psychological phenomena. The experimental method also approaches a research task  
44  
45 with pre-established conceptual constructs using existing theory. As such, the method  
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47 elicits participants’ experiences or views in order to map observations onto these  
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49 conceptual constructs. This approach thus ‘overrides’ participant accounts of their  
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51 ‘lived experience’. That is, a ‘top-down’, deductive approach to data coding and  
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53 analysis may not consider a link with the semantic content of the data deriving from the  
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55 participants’ own experiential perspective (Vaismoradi, Jones, Turunen & Snelgrove,  
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57 2016). Positivist research may also preclude a focus on how a given concept is rendered  
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2 meaningful to participants by the imposition of interpretation of the dimensions and data  
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4 by the researcher (Braun & Clarke, 2012). Finally, researchers may be drawn to  
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6 qualitative methods on the basis of other assumptions that include a belief in multiple  
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8 realities, a commitment to identifying an approach to in- depth understanding of the  
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10 phenomena in question, a commitment to participants' experiential viewpoints,  
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12 conducting inquiries with the minimum disruption to the natural context of the  
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14 phenomenon, and the reporting of findings by direct reference to participant  
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16 commentaries in order to preserve the subtlety and complexity of participant  
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18 perspectives (Vaismoradi et al., 2016).  
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27 Other reasons for using qualitative methods to examine trader accounts of their intuitive  
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29 decision-making include an enhanced understanding of why traders, who are “in touch”  
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31 (Kandasamy et al., 2015) with the internal processes of decision-making appear to be  
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33 more profitable than traders who are not (Crone, Somsen, Beek, & Van Der Molen,  
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35 2004). A qualitative investigation of this phenomenon, where traders explain how  
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37 decision-making concepts are rendered meaningful to them, may suggest reasons for  
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39 this and prove useful for improving decision-making in financial traders.  
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47 The psychological concept of ‘self-insight’ (Hardman, 2015) has long piqued  
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49 researchers’ interests. Early attribution theory studies showed that participants who  
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51 demonstrated a lack of insight into their emotional arousal tended to misattribute these  
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53 emotions to an incorrect cause, which had deleterious effects upon their mental health  
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55 (Nisbett & Wilson, 1977). Recent research with financial traders shows that those who  
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57 can engage with their physiological (interoceptive) signals of accurately detecting their  
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59 heartbeat, a proxy for intuition and emotion, are also more profitable in the financial  
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2 markets (Kandasamy et al., 2016). In this study, higher heartbeat detection scores were  
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4 correlated with higher profitability and market longevity, the accuracy of detection  
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6 increasing with the number of years in the market. While interoceptive ability may not  
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8 be the most accurate measurement of emotion or intuition, this study's findings suggest  
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10 that an ability to 'know', engage with, and appraise internal processes may be a positive  
11  
12 aid to traders. This finding is replicated in the general public. Participants who are  
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14 particularly good at sensing the heartbeat interoceptive signal choose significantly more  
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16 of the net gain and fewer of the net loss options in a gambling task (Werner, Jung,  
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18 Duschek, & Schandry, 2009). Interoceptive ability has also been correlated with loss  
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20 aversion (Sokol-Hessner, Hartley, Hamilton & Phelps, 2015) while weak somatic  
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22 responses generated by somatic markers have been correlated with 'bad' decision-  
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24 making such as choosing the incorrect options on a laboratory gambling task (Crone, et  
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26 al.,, 2004).

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37 Qualitative studies have offered explanations for these findings. A detailed analysis of  
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39 trader accounts of intuition showed that comparatively low-remunerated traders viewed  
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41 intuitive decision-making as a mysterious process ("Something comes over you and  
42  
43 you feel...", Fenton-O'Creevy et al.,pg.19). Conversely, highly remunerated traders  
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45 tended to reflect more critically and extensively on their intuitive decisions, theorizing  
46  
47 their origins, how they function and their purpose. It was concluded that the latter  
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49 engage with their intuition on a meta-cognitive' level to a greater extent than less well-  
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51 remunerated traders. Similar findings were observed by Hensman and Sadler Smith  
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53 (2010) who showed that in a study of FTSE-100 bank executives, a 'deep'  
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55 understanding of decision-making was closely associated with success in the financial  
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57 sector that they operated in.  
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6 While qualitative studies examining participants' own perspectives on how they make  
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8 decisions in banking and finance have increased our understanding of how these processes are  
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10 experienced and rendered meaningful, the research focused on Type 1 decisions only. No  
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12 published studies have examined how Type 2, analytical and reflective processes of decision-  
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14 making are experienced, understood and reported by professional financial traders. Several  
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16 explanations may account for the lack of studies in this domain. Researchers may have  
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18 assumed that the shift in academic focus from rationality to irrationality in financial markets  
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20 means that traders do not make analytical decisions, or only make them infrequently.  
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23 Researchers may also consider these types of decisions to be unimportant in this context and  
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25 thus not worthy of study. However, the concepts of 'analysis', 'rationality', and 'reflection' in  
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27 decision-making continue to be prevalent in the banking and finance domain. Traders  
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29 themselves appear to consistently refer to analytical and reflective processes when asked to  
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31 discuss their decision-making, even when the processes being discussed are intuition and  
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33 emotions (Fenton-O'Creavy, et al., 2011; Hensman & Sadler Smith, 2010). They also mention  
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35 analysis, rationality, conscious processing and reflective thought in anecdotal conversations  
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37 (any biography, autobiography or 'self-help' books that recount conversations with traders  
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39 shows spontaneous references to these concepts, for example, 'Market Wizards', by trader and  
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41 author Jack Schwager). This may be because traders are frequently graduates ~~of~~ scientific  
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43 and technological subjects (e.g., science, technology, engineering and mathematics). The  
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45 general public also expect banks and their employees to be rational and analytical (Hardman,  
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47 2015). As such, how traders view their Type 2 decision-making processes warrants further  
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49 investigation.  
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61 The present study asks similar questions of Type 2 decision-making processes as  
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63 those of qualitative investigations into intuition in banking and finance (Hensman &  
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1  
2 Sadler Smith, 2010) – do traders routinely experience analytical and reflective  
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4 decision-making, do they recognize it as such, how do they label these processes,  
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7 what are the boundaries of defining it, do they value these decisions, what dimensions  
8  
9 and properties do they ascribe to them, and what are the factors that influence their  
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11 use?  
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## 13 14 15 16 17 **2.4 Methodological considerations in research in financial trader judgement** 18 19 **and decision-making** 20 21 22 23 24

25 The study uses Thematic Analysis (TA; Braun & Clarke, 2012) as its chosen method.  
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27 In common with all qualitative methods, this approach requires the researcher to make  
28 certain decisions regarding its use. TA distinguishes between inductive data coding  
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30 and analysis, where the method seeks to build constructs implied by the data to be  
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32 constructed into a network of patterns, versus deductive/theory-driven data coding and  
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34 analysis, which uses data deriving from participants to populate pre-specified  
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36 theoretical constructs with contextually relevant content. This method also requires  
37  
38 the researcher to decide between an experimental versus critical orientation to data;  
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40 and an essentialist versus constructionist theoretical perspective (Braun & Clarke,  
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42 2012, pg. 58).  
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52 In practice, coding and analysis often requires a combination of both approaches. It is  
53 not possible to be purely inductive, “as one invariably introduces subjective experiences  
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55 to the data when analysed, and, as researchers indicate, one rarely completely ignores  
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57 the semantic content of the data when it is coded for a particular theoretical construct”  
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59  
60 (Braun & Clarke, 2012, pg. 60). However, the analytical focus tends to foreground one  
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2 or the other. Ontologically, inductive TA adopts a participant-experiential, essentialist  
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4 ('realist') ontological framework, assuming that phenomena can be apprehended  
5  
6 independently of human perception. Deductive TA is often 'critical' of this approach  
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8 and is frequently constructionist in its epistemology, which assumes that our  
9  
10 apprehension of reality is not independent of our perception of it. Instead, reality is  
11  
12 constructed through specific socio-historical cultural meanings of phenomena. From  
13  
14 this perspective, the researcher is interested in the ideas and assumptions that inform the  
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16 data gathered from theory-based positions.  
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24 The present study adopted a predominantly experiential, inductive form of TA. However, the  
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26 analysis also drew, in part, on deductive theoretical constructs. While the inductive analysis  
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28 was conducted by analysing participant interview data in order to provide direct reports of  
29  
30 experience, deductive theories of rationality informed analysis in order to make visible indirect  
31  
32 inferences that participants made to these in their accounts. As this method is less controlled of  
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34 discrete study variables and more interpretive, it also enables researchers to reflect on their own  
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36 position adopted within the study, thus accounting for how participation may influence results.  
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41 The broad epistemological perspective on language adopted here was that reality can be  
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43 accessed through language, but that accounts and experiences are socially mediated through  
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45 human subjectivities (Anderson, 2017; Braun & Clarke, 2012). The following sections  
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47 describe the process of analysis and the formulation of these insights.  
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### 53 **3. Method**

#### 54 **3.1. Participants**

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2 Fourteen male traders participated in the study (Age mean = 46.5, range 42-52;  
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4 some participants did not record their age). Traders were sampled from various  
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6 banks and trading entities operating in London. They specialised in several types of  
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8 trading. Market makers, predominantly working in banks, make two-way prices in a  
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10 financial product for end users. Market makers take positions until they can hedge  
11  
12 them. Another type of trader is the end user, for example, asset managers or  
13  
14 pension fund managers, who trade various instruments using investors' money. The  
15  
16 third type of trader is the hedge fund or 'prop' trader. These trade instruments using  
17  
18 investors' or their own money. Although these different roles are characterised by  
19  
20 variable decision-making properties, all involve frequency and timescales resulting  
21  
22 in pressured outcomes, making these participants ideal for studying the dual  
23  
24 processes involved in decision-making.  
25  
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33

34  
35 In line with the theoretical assumptions of qualitative methods (Braun & Clarke,  
36  
37 2006), purposive sampling was employed, with the group for whom the research  
38  
39 problem was relevant. Thus, inclusion criteria which were male (the majority of  
40  
41 financial traders working in professional environments are male, and, although an  
42  
43 important issue, gender will not be considered further in this article), had worked  
44  
45 for a several years in finance (given the correlation between performance and  
46  
47 employment longevity outcomes (Kandasamy et al., 2016) we were keen to  
48  
49 understand trader decision-making in traders who were not only currently  
50  
51 employed but who could report on their daily activities without the distractions  
52  
53 engendered by issues involved in job search or changes in role), and who were  
54  
55 working specifically as traders and not in one of the many other roles in the  
56  
57 financial services industry (for example, quantitative analysts, brokers, or  
58  
59  
60  
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1  
2 economists).

### 3 4 5 6 7 **3.2. Procedure**

8  
9  
10 The data reported here derived from one-to-one interviews between the  
11 authors and traders. A semi-structured interview schedule was used to ask  
12 traders about their decision-making (as well as topics such as organization,  
13 work environment, and use of technology. The interview schedule is  
14 available upon request). Interviews began with a general introduction  
15 followed by the interview questions effective in eliciting participants'  
16 experiences or views. Interesting or 'niche' aspects were interrogated further  
17 and, disambiguation of definitions (some participants asked for explanations  
18 of 'intuitive' or 'analytical decision-making'). The interview schedule was  
19 flexible and other issues were also discussed when raised, although the  
20 overall order and structure of the interview questions was maintained.  
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### 40 **3.3.Data analysis**

#### 41 42 **Transcription of interviews**

43  
44  
45 Data were transcribed verbatim for content, overlapping speech, untimed pauses  
46 (differentiations were made between long and short pauses), interruptions and  
47 'backchannels'. Backchannels such as 'yeah' and 'mm' were recorded but  
48 excluded from analysis on the grounds that they are generally not considered to  
49 function as constituent parts of turn-taking. For example, rather than an attempt  
50 to gain the floor (as in the case of 'butting-in' interruptions, which are  
51 unsuccessful attempts at doing this), they in fact have the opposite function of  
52 facilitating the current speaker's turn at talk (Anderson, Beattie & Spencer, 2001).  
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## **Analytical method**

The accessible, systematic, and rigorous approach to coding and theme development of Thematic Analysis (TA) was employed (Braun & Clarke, 2006). Given the research aims of an inductive, experiential and essentialist form of TA, we sought to examine how different forms or modes of understanding of Type 2 processes can be identified from traders' reported diverse 'lived' experiences of it.

Audio recordings of the interviews were transcribed and checked for accuracy. Interview transcripts were analysed in six phases using Braun and Clarke's (2006) guidelines for undertaking thematic analysis. Activities undertaken as part of each stage of coding and analysis are summarized as follows; both convergences and divergences in the utterances (as well as the researcher's preconceptions) contributed to a full representation of trader understanding of their decision-making. The scope of Type 2 was broadly conceived, beginning with all utterances that could be coded as references to Type 2 being included. The utterances referring to intuition and analysis were coded for content. Earlier utterance content was reconsidered in light of content that emerged later in the analysis. Given their multiple meanings, utterances again were subject to a classification system that coded the utterance, over several iterations, via an increasing level of abstraction, with the goal being to capture a single aspect of what was said as succinctly as possible. The final step in the analysis was to concentrate these thematic aspects of the content of the utterances until saturation point was reached (Braun & Clarke, 2006; 2012). Finally, utterances were scrutinised once more to ensure that emergent trends had not been overrepresented (Willig, 2001). The two emergent themes, subordinate themes and codes generated from the TA are detailed in Figure 1 below

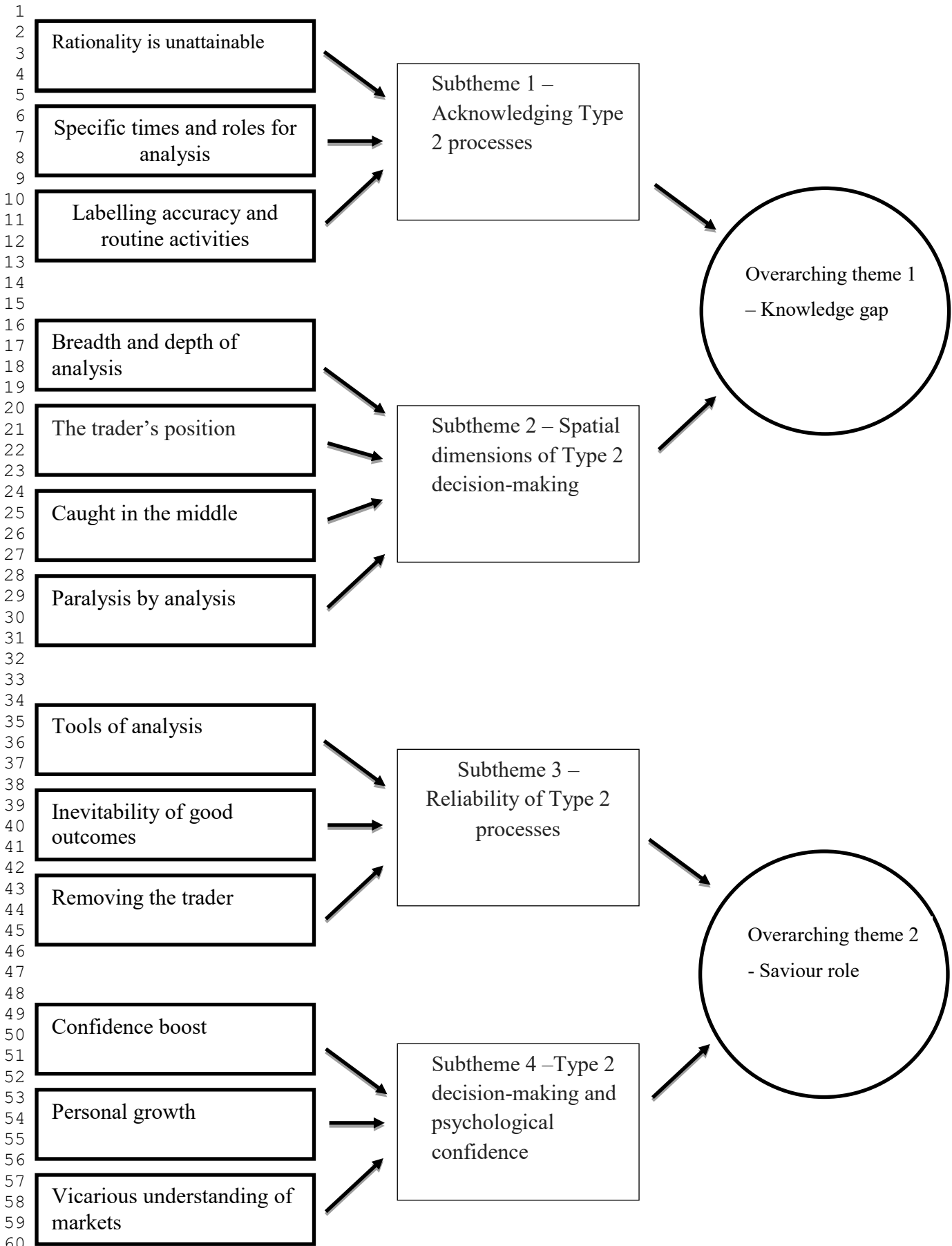


Figure 1 – Emerging data structure

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## Findings

The findings, commentaries and illustrative quotes are described below. We present the findings in terms of the two emergent themes and four thematic categories that were derived from our interview data (see Figure 1).

### 4.1 Overarching theme 1: Knowledge gap

The first overarching theme (constituted out of two subthemes – see Figure 1) concerned the detail and accuracy of knowledge regarding Type 2 that traders relayed to us. Despite frequent assertions in the literature that analytical processes are accessible, participants in the present study demonstrated that this was not the case given that their knowledge about these types of decisions were often only partial or incomplete. Traders appeared to have difficulties recognizing, acknowledging or defining the analytical and reflective process at all stages. The two subthemes below illustrate these aspects.

#### 4.1.1. Subtheme 1 – Acknowledging Type 2 processes

Traders appeared to have some difficulty acknowledging and defining Type2. They explicitly denied the possibility of rationality in trading despite traders attesting to valiant attempts to be rational and reflective. This is in accordance with predictions from the behavioural finance literature which argues that financial markets are irrational. For example,

*I try to be objective and filter out emotions and things like that but it's difficult*

*I don't think we can ever be rational*

1  
2 Despite these formal protestations to the impossibility of complete rationality, participants  
3  
4 acknowledged specific circumstances or situations when analytical, reflective decisions were  
5  
6 made, for instance, when they had suffered large losses, during quiet periods in the trading day,  
7  
8  
9 when their role demanded it, or when they were trading a specific product. For example,

10  
11  
12  
13  
14 *But then, there's the odd period of like, you know, one or two hours where not a lot goes on*  
15  
16 *and that's the time that you do your analytical, erm, decision-making. Some days you have*  
17  
18 *absolutely nothing going on in which case you either sit there chatting or twiddling your*  
19  
20  
21 *thumbs or you start analysing stuff a bit more deeply*

22  
23  
24  
25  
26 *Sometimes, you got big losses and you have to, you know, start, basically to go back to your*  
27  
28 *homework and try to understand what happened*

29  
30  
31  
32  
33  
34 *When you start losing money, that's when you start really analysing stuff more carefully and*  
35  
36 *saying, "Why am I losing money?", you know, "What am I calling wrong? Do I have to change*  
37  
38 *my positions?"*

39  
40  
41  
42  
43 *I'll use the analytic processing system, system 2 is that, for the specific instruments that I trade*

44  
45  
46  
47  
48 Traders also exhibited difficulties regarding labelling or clearly describing the actual process of  
49  
50 analysis. 'False starts' were a feature of their discourse, as well as descriptions of Type 2 that  
51  
52 were tautological or repeated descriptions of the same activities only in slightly different terms.

53  
54  
55 For example,

56  
57  
58  
59  
60 *So, the first part of my [analytical] decision-making process is not really a decision-making*  
61  
62 *process, it's to choose, work out what type of market you are operating in at that point in time.*  
63  
64  
65

1  
2 *I then develop trading rules*  
3

4  
5  
6  
7 *You need to do a combination of things. I think there, erm, sort of value generation decisions*  
8  
9 *whereby you look at the book or you look at the market and you kind of express your view of*  
10  
11 *what is it we want to be doing, what's cheap, should I have this [trading position], on should I*  
12  
13 *have that on? And then there's more analytical decisions where you look at the risk you have,*  
14  
15 *you look at how much you can lose and you just try and take analytical decisions – what risk*  
16  
17 *should I close at, which of these has got the least upside versus risk involved?*  
18  
19  
20  
21  
22  
23  
24  
25

26 However, despite denials of rationality in trading, and only conceding to rational analysis at  
27 specific times or situations, the traders failed to label what were clearly analytical processes  
28 such as reading research or listening to news. These analytical activities were described as  
29 mundane, 'everyday', and routine, and included 'reading' 'watching the news', listening to  
30 economist views', and 'studying what's happening'. For example,  
31  
32  
33  
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41

42 *Well, it's a bit mixed because sometimes I'll come home and read the Sunday papers and I'll*  
43 *read through the sections and study what's happening*  
44  
45  
46  
47  
48  
49  
50

51 These descriptions were frequently amplified to highlight their onerous, extensive and  
52 exhausting nature. This was achieved through descriptions of 'working through the night', 'on  
53 holiday', 'at home' and while 'living 100% on the market', suggesting that traders are aware,  
54 on some level, of the analytical and reflective process that is onerous and all-encompassing.  
55  
56 However, at no stage did traders publicly label or identify these processes as analytical during  
57 these interviews. For example,  
58  
59  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 *It's taking so much energy of you, it's not just for the twelve hours you spend in front of the*  
5  
6  
7 *screen, even after when you go home, you think you've got your Blackberry, you think about*  
8  
9 *your position, you check the market, if there's any news, and basically when you go on holiday,*  
10  
11 *you're basically all the time checking what the market is doing, you basically live 100% on the*  
12  
13  
14 *market*  
15  
16  
17  
18

19 *We spend hours and hours per day to read and read and read, and non-stop*  
20  
21  
22  
23

24 *Every day we are checking, checking, reading, reading, reading*  
25  
26  
27  
28

29 *Myself, I read the news and read the basic news that day and look at economic news when it*  
30  
31 *comes out. I'll read the views of our economists on strategy but primarily it comes down to*  
32  
33  
34 *actually following the market and seeing how it behaves*  
35  
36  
37  
38

39 *I do most of my reading of news and see what other markers have done, other than my own, at*  
40  
41 *nighttime [...] and also, if I'm working on a spreadsheet, I will probably work on that at home*  
42  
43  
44  
45

#### 46 **4.1.2 Subtheme 2: Spatial dimensions of Type 2 decision-making**

47  
48 The lack of 'knowledge' that traders exhibited by not recognizing, acknowledging or defining  
49  
50

51 Type 2 processes was also apparent through their attempts to explain how those analytical  
52

53 processes exist 'spatially'. Traders discussed how 'deep' these processes are, where their  
54  
55

56 boundaries exist, how they relate to other internal processes, and the type of spatial relationship  
57

58 ("behind", "alongside"). Frequently, traders described the Type 2 processes as 'blended' or  
59

60 'mixed' with other processes such as intuition, suggesting the usefulness of Type 2 remains  
61

62 undecided. For example,  
63  
64  
65

1  
2  
3  
4 *And similarly, with the fundamentals, it, there's a real danger that you think you know more*  
5 *than, you know more than everyone else, which erm, you know, is a and people put trades on*  
6  
7 *that basis, so I think that's why the blend seems good*  
8  
9

10  
11  
12  
13  
14 *I think as well as the science, and it's just trying to balance those up*  
15  
16  
17  
18

19 *I think if you could get something in the middle where you listen to that voice inside your head*  
20  
21 *but also you have to check it [uhu] against something, if you can.*  
22  
23  
24  
25

26 *And then there's another layer that is analytical and together with value judgements and risk*  
27 *assessment, it's, well, important to consider*  
28  
29  
30  
31  
32  
33

34 Some traders detected processes that they were prepared to label as analytical. However, these  
35  
36 descriptions again highlighted the lack of clarity or certainty with respect to the spatial  
37  
38 boundaries and positioning of these processes. For example,  
39  
40  
41  
42

43 *Those who are more intuition led will have some emotion attached to their decisions, whereas*  
44 *those who are entirely mechanistic won't need that. I think that, because I'm somewhere in the*  
45  
46 *middle*  
47  
48  
49  
50  
51  
52  
53  
54  
55

56 The consternation and surprise expressed regarding the dimensions of analytical processes such  
57  
58 as their 'capacity' or 'depth' were indicative of traders' difficulty with cognizing the processes.  
59  
60  
61  
62  
63  
64  
65

For example,



1  
2 *They're pointing out you know, certain part of the screens, and you, you must be amazed, you you don't*  
3  
4 *understand [mm] but you learn. You learn because it's, basically it's a slow process because you, you*  
5  
6 *can look at a small area, increase after that a bigger area, [uhu] and it's basically a question of putting*  
7  
8 *the time on the table, just working and working and working and working.*  
9

10  
11  
12  
13 *You know the contracts almost by heart, you recognise them, you know that a few days ago this*  
14  
15 *spread was trading at this level, you follow all of them and you basically bring this in your*  
16  
17 *memory, and you're adding, adding, adding*  
18  
19  
20  
21  
22

23 *Despite difficulties in understanding the spatial dimensions of analytical processes under*  
24  
25 *normal conditions, traders appeared to be acutely aware of these during volatile periods. They*  
26  
27 *found it easier to recount the outer limits and dimensions of analytical processes when their*  
28  
29 *volume and speed of delivery halted ('paralysed') trader decision-making. For example,*  
30  
31  
32  
33

34  
35 *I find any more than this and decision-making becomes impossible. Paralysis through*  
36  
37 *analysis.*  
38  
39  
40  
41

42 *Most of all, er, we had young traders coming to a few years ago and erm, I remember some of*  
43  
44 *them the first week, they had big headaches because basically the (inaudible) the information*  
45  
46 *going through was so, so important and it was very difficult for them to process everything, and*  
47  
48 *erm, the brain wasn't used to, to digest, or to learn many things in a very short time*  
49  
50  
51  
52  
53

54 *Erm, and you know, some people leave it so long that the opportunity is gone and then you've*  
55  
56 *got the other people who will just go in because they've seen some price action and they just*  
57  
58 *feel this is on a trend and you know*  
59  
60  
61  
62  
63  
64  
65

1  
2 : [...] but the thing is things happen very fast in real time, if you had to think  
3  
4 too much about it [hm] you've missed it.  
5  
6  
7  
8

## 9 **4.2. Overarching theme 2 – Saviour role**

10  
11  
12  
13  
14 Although the previous overarching theme revealed the ‘gaps’ in knowledge and understanding  
15  
16 traders exhibited with respect to analytical processes, the second emergent theme – ‘Saviour  
17  
18 role’, showed that traders did not avoid making decisions based on processes that they know  
19  
20 little about, or understand. Rather, traders portrayed their Type 2 decisions in a saviour role,  
21  
22 that is, a set of cognitive processes and their attendant external tools that can ‘rescue’ traders  
23  
24 from losses during uncertain markets. This was achieved in two ways. Firstly, traders  
25  
26 appeared to rely on analytical processes as a predictable and dependable resource that will  
27  
28 prevent them from making poor decisions in a difficult trading environment. Secondly, Type 2  
29  
30 processes were viewed as providing traders with ‘psychological capital’ such as self-esteem,  
31  
32 confidence, and even personal growth as a trader.  
33  
34  
35  
36  
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39  
40

### 41 **4.2.1. Subtheme 3 – Reliability of Type 2 processes**

42  
43 Traders frequently described as reliable and reassuring the tools of Type 2 — charts, graphs,  
44  
45 spreadsheets and ‘technicals’ deployed. These tools allowed them to capture an ‘edge’ over  
46  
47 other participants, and for which they expressed gratitude. For example,  
48  
49  
50  
51

52  
53 *[So I read, I look at the charts, I look at price sections, and with these people I am constantly*  
54  
55 *trying to gauge how the market at large is positioned] But that's where I, and I use a lot of*  
56  
57 *technical analysis to work out where the critical points are...*  
58  
59  
60  
61

62 The processes of analysis and reflection were frequently described as a well-trodden reliable  
63  
64  
65

1  
2 behaviour that was simultaneously comforting and dependable:  
3  
4  
5  
6

7 *You never know what's going to happen, of course. I will go through the same routines, I will*  
8  
9 *look at the market objectively, and I will in the factor in monotonous time way and try to*  
10  
11 *analyse what I see in front of me, and choose the market environment that I'm in, and watch*  
12  
13 *the relationships that I am comfortable trading across a variety of marketplaces*  
14  
15  
16  
17  
18

19 The dependability of traders on Type 2 was mentioned in relation to perceived inevitability of  
20  
21 successful outcomes:  
22  
23  
24  
25

26 *You have your analysis so that's fine.*  
27  
28  
29  
30

31 *I made hundreds and hundreds of prices all day long, constantly trading, fighting this one*  
32  
33 *thing, boom boom boom. I used technical analysis the whole time, that's all I based my stuff on.*  
34  
35 *So I didn't need lots of information, all I had was one price, and my chart, [uhu] you know. I*  
36  
37 *made a good go of it, and my decisions was based on the chart, based on the price action*  
38  
39  
40  
41  
42

43 And, the unquestioningly dependable nature of analytical decision-making was complete with  
44  
45 the removal of the trader altogether from the decision-making process:  
46  
47  
48  
49

50 *You just need your technical*  
51  
52  
53  
54

55 The reliability of Type 2 was such that traders even inferred that these processes are all you  
56  
57 need for a successful decision, effectively removing the human trader from the process;  
58  
59  
60  
61

62 *Yeah, formal [analysis] is good because, you know, I think it builds good discipline in, to*  
63  
64  
65

1  
2 *people I think, you know, I think they know what's expected of them*  
3  
4  
5  
6

7 *It's a mechanistic thing, you apply your rules*  
8  
9  
10

#### 11 **4.2.2. Subtheme 4 -- Type 2 decision-making and psychological confidence**

12  
13  
14 The final subtheme describes the psychological, or mental, confidence that analytical decisions  
15 afforded traders, that gave them an 'edge' over other participants, prevented them from making  
16  
17 poor decisions during volatile markets volatility and even nurtured them as traders. The  
18  
19 concept of 'Psychological capital' is appropriate here. 'Psychological capital', or confidence,  
20  
21 is defined as "an individual's positive psychological state of development", and is  
22  
23 characterized, according to Avey, Luthans & Smith (2010) by having high levels of "HERO" --  
24  
25 the four elements of hope, self-efficacy, resilience, and optimism. Present interviews contained  
26  
27 numerous examples of these four concepts, suggesting a 'heroic' role for analysis from the  
28  
29 traders' perspective. Type 2 processes were able to provide a much-needed 'confidence boost'  
30  
31 during difficult times. For example:  
32  
33  
34  
35  
36  
37  
38  
39  
40

41 *Yeah, but when you get a big hit, you start losing money, when you lose everything, to rebuild*  
42  
43 *your confidence, to try to question yourself, what happened, what went wrong in my position,*  
44  
45 *why I couldn't see this, and you try to understand your mistakes, were you blind, probably*  
46  
47 *missed something on the curve, missed something on the kind of information, macroeconomic*  
48  
49 *views, and basically, you're going deep in your analysis process, and try and understand the*  
50  
51 *failure.*  
52  
53  
54  
55  
56  
57

58 *And remember, you can stop and analyse and talk yourself into anything. You can always find*  
59  
60 *the reasons. It's knowing when not to play as well as when to play*  
61  
62  
63  
64  
65

1  
2 Traders also described analytical decision-making allowing ‘personal growth’, maturity and  
3  
4 development of the trader as a professional:  
5  
6  
7  
8

9 *And, I have to be honest, I think that comes more with age. It’s the sort of thing I do now but I*  
10 *didn’t do 10 or 15 years ago. Erm, I don’t know if I thought very much that it was relevant, or*  
11 *that I was just too lazy to be doing it...or what. But it was only comparatively recently that I*  
12 *started to pay more interest to it, to think about the implications of the things I spot on the*  
13 *news.*  
14  
15  
16  
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18  
19  
20  
21  
22  
23

24 *And I suspect that, I’m just trying to think are there some markets you do and some you don’t*  
25 *but actually as I’m thinking now, in all of them it would matter. I think as a junior, I dunno if*  
26 *it’s beyond you to grasp that,*  
27  
28  
29  
30  
31  
32

33  
34 *They don’t like to be erm too controversial, [uhu] and stand up and say ‘you’re all wrong, I’m doing the*  
35 *opposite’. [uhu] But that’s where I, and I use a lot of technical analysis to work out where the critical*  
36 *points are [uhu] that these people are gonna get into trouble.*  
37  
38  
39  
40  
41  
42

43 *And emotions at the time when you lose control of the scenario, as I said the golden rule of trading is to*  
44 *stay in business and to stay solvent, and then you apply these rules and things like that. There are times*  
45 *where you lose control, in terms of erm, even if you want to close a position, the liquidity is not there,*  
46 *you can’t. [uhu] And the losses become bigger and bigger and bigger, [uhu] and and, it’s actually a*  
47 *very, very scary thing,*  
48  
49  
50  
51  
52  
53  
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55

56 Traders described the vicarious processes that analytical decision-making bestowed on them,  
57  
58 allowing them to ‘read’ other traders’ minds or decipher how the markets function, predicting  
59 what others are going to do next:  
60  
61  
62  
63  
64  
65

1  
2  
3  
4 *And really, for my traders or for myself, it's case of the decision-making process, realistically,*  
5  
6  
7 *is two-fold: it's to choose the type of market you are in, you then apply the rules, and the*  
8  
9 *second decision-making process is understand where you're wrong, and then exit a trade*  
10  
11 *without losing too much money. But it's all rule based...*

12  
13  
14  
15  
16  
17 *Well, a lot of the time when you're putting on trading positions, what you're actually doing is*  
18  
19 *taking a view on the reaction of other people [...] It can either be other traders in the market or*  
20  
21 *it can be general population as a whole. Are they going to sell out their stock, are people going*  
22  
23 *to (inaudible), just the sort of ability to understand the mood that people have in general and*  
24  
25 *from that how people then behave*

26  
27  
28  
29  
30  
31 *You know how you can take advantage of the fact that you know how other people will react in*  
32  
33 *a certain situation. If certain news comes out – I don't buy it. I don't see this as serious as the*  
34  
35 *deadline suggests, but everyone else will and it will make everyone else do the following.*

## 36 37 38 39 **5. Discussion and conclusions**

### 40 41 42 **5.1. Theoretical contributions**

43  
44  
45  
46  
47  
48 *The data presented descriptions of analytical decision-making as related in accounts*  
49  
50  
51 *of professional financial traders. From this, two emergent themes were identified,*  
52  
53 *which showed how professional traders view the concept of 'analysis' as it applies*  
54  
55 *in the banking and finance sector. Previous research had only characterized trader*  
56  
57 *judgements as either strongly normatively rational, or not. This study examined*  
58  
59 *trader understanding of Type 2 decisions in a more natural context than previous,*  
60  
61 *predominantly positivist studies. While the training of finance academics may lead*  
62  
63  
64  
65

1  
2 them to prefer methods that permit greater control of variables and clearer causal  
3  
4 interpretations, it is important to examine the experiential, 'lived experience' of the  
5  
6 use and meaning of Type 2 decision-making from the perspective of the traders.  
7  
8

9 The hypothetico-deductive framework has produced important findings by  
10  
11 providing correlational or causal analyses of relationships between quantifiable  
12  
13 variables ((Krawczyk & Baxter, 2020) as well as some compelling trader accounts  
14  
15 of their intuitive judgement (Hensman & Sadler Smith, 2010). This study is the first  
16  
17 to investigate how traders understand their own Type 2, analytical decision-making.  
18  
19  
20  
21  
22  
23

24  
25 This study contributes to literatures on behavioural finance, decision-making and  
26  
27 trader management by introducing two overarching themes that explain how Type2  
28  
29 was simultaneously viewed as opaque, yet also a concept on which traders appear to  
30  
31 rely and trust. These findings indicate several sources of tension, but also strategy,  
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33 in how traders understood and recounted their analytical activities.  
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41 This study clearly shows that even within the analysis-intensive domain of financial trading,  
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43 traders had an imprecise and unclear understanding of decisions that are analytical, reflective  
44  
45 and rational. They also had difficulty or an unwillingness to even describe these processes as  
46  
47 such. Traders did refer to instances of detailed analysis or reflection processes, but only  
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49 under certain circumstances such as when markets were inactive. This implies that traders  
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51 view their decision-making as not particularly analytical or reflective during fast-moving,  
52  
53 busy markets, but more so during periods of market inactivity. Simultaneously, traders failed  
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55 to explicitly label as analytical and reflective, activities that clearly were so, for example,  
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57 reading political news and listening to economist views.  
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2 This study also discussed traders' conceptualisation of the spatial relationship between Type 2  
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4 and other decisions such as those based on intuition. As above, this also suggests that traders  
5  
6 may not recognize or understand their analytical decision-making processes. This suggest  
7  
8 that traders may have either been encountering these processes for the first time, in a  
9  
10 different form, or were repeatedly surprised at the analytical potential of Type 2 decisions.  
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14 All these possibilities imply a process that is yet to be fully explored and comprehended. The  
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16 variability in knowledge of Type 2 processes was also apparent in traders' attempts to  
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18 describe the relationships between Type 2 and other decision-making process, and between  
19  
20 the actual trader and the processes of analysis. The vagueness of descriptions such as 'in the  
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22 middle', 'blended' and 'mixed' suggest that these relationships are not understood by traders.  
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26 While attempts to describe the relationship between Type 1 and Type 2 decision-making  
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28 processes (Dual Process theories) has been alluded to in previous studies (Fenton-O'Creevy  
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30 et. al.,2011; Hensman & Sadler Smith, 2010), the themes revealed here offer insights into the  
31  
32 complexity of these processes in banking and finance employees.  
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39 In dual-process theories, it is usually Type 1 decisions – 'gut feeling', or intuition – that are  
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41 interpreted as the unconscious, automatic, involuntary, not verbally explicit, and difficult to  
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43 articulate processes (Kahneman, 2003; De Neys, 2009, 2010, 2012). These processes often  
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45 reach an outcome or conclusion before a person has even begun to organise and recall relevant  
46  
47 information (Zajonc, 1980). In contrast, Type 2 decisions are hypothesised to be reflective,  
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49 conscious, deliberative, controlled, and accessible, which should make them easier for people  
50  
51 to articulate how conclusions were made using this system (Kahneman, 2003). It is in the  
52  
53 context of Type 1 decisions that researches have drawn attention to the detectability of these  
54  
55 internal processes. Researchers even considered whether it is counterintuitive to ask  
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57 participants to reflect in detail on processes that are theorised to be automatic, unconscious, and  
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2 mostly undetectable (De Nays, 2012). Studies have questioned the validity of verbal reports  
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4 that ask participants to reflect on their automatic mental processes. Some researchers have also  
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6 postulated that participants cannot be expected or may be unwilling to offer reports on their  
7  
8 internal automatic processes (Allom, Mullan, Monds, Orbell, Hamilton, Rebar & Hagger, 2018;  
9  
10 Labrecque & Wood, 2015; Orbell & Verplanken, 2015). Others have drawn a distinction  
11  
12 between verbal reports on an internal process and requesting insight from a participant into the  
13  
14 intricacies of how these processes actually work (Allom et al., 2015). Present findings suggest  
15  
16 that these issues should also be considered for Type 2 processes. Further studies may  
17  
18 investigate whether traders, working in unique environments of banking and finance, are able  
19  
20 to access, understand and articulate only some of their analytical processes or all of them.

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22 Which aspects of cognitive architecture, for example, attention or accessibility issues, are  
23  
24 involved in this? Is there a detection issue (de Neys, 2012) and if so, how does it apply to  
25  
26 trader understanding of Type 2 decisions? Should a hierarchy of detectable analytical decisions  
27  
28 be recommended? Researchers may wish to investigate why clearly analytical processes such  
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30 as reading or listening to news were not considered by traders analytical, reflective or even  
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32 rational.  
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45 The banking and finance environment itself may not be amenable to traders accessing  
46  
47 or articulating their analysis of processes. Given the often volatile and turbulent  
48  
49 nature of the financial markets, it is frequently thought that traders may not have time  
50  
51 to make analytical and rational decisions (Fenton-O’Creevy et al., 2011). Traders  
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53 may have internalized these beliefs to the extent that even when they do perform  
54  
55 analytical activity, it is not recognised. The participants in our study alluded to time  
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57 periods (‘lulls’ in market activity, having time to ‘twiddle thumbs’) where analysis  
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59 and reflection are possible. Further research should attempt to discover why the  
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2 financial markets environment recognizes or otherwise makes visible only some  
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4 analytical decision-making activity and not others.  
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11 The finding that traders may experience difficulty conceptualising how their processes of  
12  
13 decision-making may be related to one another coincides with recent developments in JDM  
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15 (Judgement and Decision Making) literature (Hardman, 2009) that extend a dual-process  
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17 theorisation of decisional processes. That is, the field has progressed from ‘simplistic’ dual-  
18  
19 opposition theorizing between heuristic and reflective decision-systems to one where the two  
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21 types of information processing strategies may be used concomitantly or sequentially (Evans;  
22  
23 2008). In addition, recent studies distinguish between the different stages of the decision-  
24  
25 making process such as the information processing stage, through the judgement and decision  
26  
27 stage, and ending with the behaviour/action stage (Evans & Stanovich, 2013). Recent  
28  
29 discussions concerning the merits of default-interventionist versus parallel-competitive  
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31 decision-making theories (Samson & Voyer, 2014), multi-level influences on affective and  
32  
33 analytical decision-making (Cristofaro, 2019), or, developments in ways that decision-makers  
34  
35 may ‘overcome’ the thinking-feeling dichotomy (Cristofaro, 2020).may also be reflected in our  
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37 participants’ attempts to articulate the order, sequence, positioning and form of analytical  
38  
39 decisions. Importantly, our findings uniquely address the issue of selection of optimal trading  
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41 strategies in volatile and turbulent markets during which traders experience complex cognitive  
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43 demands.  
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56 Traders viewed Type 2 decisions as occupying a ‘saviour’ role in trading, frequently used to stop losses  
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58 and return profits in difficult months. Type 2 decisions made using tools such as “charts and graphs”,  
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60 rule-based logic algorithms (“if-then rules”), and analyst research (“all you need is your analysis”) were  
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62 not only perceived as a support during volatile and turbulent markets but also as confidence and esteem-  
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2 building exercises. Analytical processes were also described as giving traders a psychological  
3  
4 advantage, or, ‘edge’ over others through the ability to allow traders to predict future actions of  
5  
6 other market actors (Fenton-O’Creevy et al., 2011). While some traders discussed the problem  
7  
8 of ‘too much analysis’ leading to the inability to execute any trade through ‘paralysis by  
9  
10 analysis’, traders were generally optimistic regarding the ‘saviour’ qualities of Type 2 decision-  
11  
12 making processes. The reported over-reliance on Type 2 decisions may represent a  
13  
14 problematical trend where some traders wished to extract the human decision-  
15  
16 maker from the  
17  
18 analytical judgement process completely, relying entirely on systematic processes and  
19  
20 instruments for optimal trade selection. This is often termed algorithmic trading and is typically  
21  
22 performed by computer software. These issues are likely to become relevant given the inevitable  
23  
24 spread of digitalization in the banking sector (Niemand, et al., 2020) and its role in the enhancement of  
25  
26 their reputation (Ozkan-Tektas & Basgoze, 2017) and profitability (Del Gaudio et al., 2020). Future  
27  
28 research investigating intuitive versus analytical deployment of the decision-  
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30 making processes  
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32 should focus on how participants may perceive analysis as providing security and “heroic”  
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34 properties in excess of their actual contribution to producing a normatively correct decisional  
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36 outcome.  
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43 The accounts of Type 2 decisions as being highly supportive of effective performance may be  
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45 attempts to provide socially desirable responses by the traders to the researchers. Forewarned  
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47 by many “smart thinking” science books that popularized ideas by Kahneman (2011), Ariely  
48  
49 (2008), Syed (2015) and others, traders may be tacitly acknowledging the cultural value placed  
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51 on analysis and reflection over impulsivity and instinct, particularly in the context of financial  
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53 decision-  
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55 making. This raises important concerns regarding whether researchers can ever  
56  
57 accurately access internal processes. Future research should investigate if social desirability is  
58  
59 a potential barrier to the accuracy of verbal reports during the interview process. Interviewers  
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61 may need to encourage participants to be as candid and honest as possible in their responses,  
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2 and remind them of this prior to answering each question.  
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7 In combination, the two overarching themes introduced in this study indicate that professional  
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9 financial traders are willing to cope with a 'gap' in their knowledge regarding Type 2  
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11 decisions, and how they are made in the interests of maintaining trading activity and pursuing  
12  
13 long-term performance. This suggests that traders may be reluctant to invest time in a precise  
14  
15 evaluation of Type 2 decision processes (Labouvie-Vief, 2003). There is a concern that the  
16  
17 pursuit of trading goals through an insufficient understanding of analysis may lead to  
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19 inadequate decisions. Asking traders to reflect on these issues as they build expertise  
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22 (Schwarz & Clore, 2003) may help them reduce decision-making errors.  
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## 31 5.2. Managerial implications and limitations 32 33 34 35

36 Our findings suggest a number of implications that trader managers may  
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38 undertake to help traders make profitable decisions. Research indicates that  
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40 accurate self-insight in traders into their own decision-making processes is  
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42 correlated with success in financial markets (Crone et al., 2004; Kandasamy et  
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44 al., 2015). Trader managers should regularly ask traders to recount and record  
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46 events and circumstances that resulted in successful trades while making  
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48 analytical decisions. Then, they may select and reject future trading  
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50 opportunities by utilising these same processes again. Traders should also be  
51  
52 made aware that much of their daily activities that they may consider as  
53  
54 mundane are in fact analytical processes and rational judgements, and required  
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56 for their Type 2 decision-making during the day. This may encourage traders  
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58 to adopt a more methodical and rigorous approach to everyday actions such as  
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2 reading that may lead to successful outcomes.  
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7 Traders could also be encouraged to discuss if their reliance on what they describe  
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9 as analytical decisions may be excessive. Present findings indicate that traders  
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11 appear to believe that provided they use the necessary instruments (“charts and  
12  
13 graphs”) and concepts (“if-then rules”), good trading decisions are guaranteed.  
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16 Acknowledging that traders may need to continuously monitor their own decision--  
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18 making behavior despite these instruments may lead to insightful management  
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20 conversations. That is, shifting the focus of conversation to the importance of  
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22 acknowledging the role of the human trader in the decision--making process will  
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24 allow traders to articulate the quality of their own actions in these decisions.  
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31 The finding that traders appear to require a ‘psychological crutch’ when trading and  
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33 that Type 2 decision--making processes serve this purpose is intriguing. Type 2  
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35 decisions may encourage psychological concepts such as hope, optimism and  
36  
37 resilience to ‘save’ traders during turbulent markets and offer them ‘psychological  
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39 growth’ at other times. Managers may usefully embark on conversations with  
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41 traders by highlighting that an over-reliance on the ‘feelgood’ aspect of analytical  
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43 decisions may not produce the expected positive outcomes. Traders may be  
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45 encouraged through practical exercises such as recalling examples of when Type 2  
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47 decisions did not serve the anticipated purpose for the trader, to carefully recalibrate  
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49 their understanding of analytical decisions.  
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58 This research has some limitations. Although we have argued for the importance of an  
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60 account of analytical decision--making that includes trader abilities to introspect, this capacity  
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62 is known to be susceptible to individual differences where participants may be poor at  
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1  
2 recalling or predicting their experiences of decision-making (Halpern, 2015). Participants'  
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4 accounts are also influenced by social and cultural trends, making it difficult to adopt realist  
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6 epistemological perspectives on what they discuss with researchers (Braun & Clarke, 2012).  
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9 Thus, studies such as ours need to be complemented with not only more physiologically  
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11 and cognitively based research but also further qualitative studies.  
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16 Although traders were cognizant of the need to appear accountable, analytical and  
17  
18 dispassionate in their trading to satisfy current external influences, they were also aware of  
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20 social pressure to be courageous, aggressive and dominating, that is, 'masculine'. These  
21  
22 characteristics were exhibited in combination with several trader accounts, where Type 2  
23  
24 processes were alluded to as their "weapon" in confrontations with financial markets ("all I  
25  
26 had was one price, and my chart; you know. I made a good go of it"). Given the social  
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28 expectations of exhibiting masculine behaviours, while acknowledging public assumptions of  
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30 detailed analysis and rationality in financial markets, it is possible that our recorded accounts  
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32 may not reflect the actual level of analytical or intuitive decisions being made by traders when  
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34 at work.  
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43 An alternative source of accounts could be the voice recordings of trading desks made for  
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45 compliance purposes. However, the majority of actual trader interactions at work are highly  
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47 abbreviated exchanges (Fenton O'Creevy et al., 2011), thus difficult to analyse for behaviours  
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49 and decision-making processes. In addition, these recordings are typically highly  
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51 confidential, the use of which would violate privacy. Nevertheless, analysis undertaken from  
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53 data collected in more naturalistic settings than even interviews, may alleviate the impetus for  
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55 traders to produce socially desirable responses to researcher in an empirical study, although,  
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57 the need to appear 'masculine' in front of other traders on the trading floor would likely  
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59 remain.  
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4 To conclude, we now know that Type 2 processes are used extensively in decision-making in  
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6 financial markets, are a source of insight and strategy, but also of liability. Strong social  
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8 pressures exist that may direct traders away from optimal decision-making. Our research  
9  
10 indicates that traders appear to be aware of at least some of these issues, but, nevertheless, use  
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12 analytical decision-making as a reliable instrument during market volatility, but especially  
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14 during quiet markets. These findings provide an extensive source of discussion topics that  
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17 trader managers can undertake with traders to improve decision-making.  
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