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## Ch 7: Intuition, expertise and emotion in the decision making of investment bank traders

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**in** Sinclair, Marta, ed. *Handbook of research methods on intuition*. Edward Elgar Publishing, 2014.

The role of intuition may be especially dominant in organizations embedded in turbulent environments (Khatri & Ng, 2000). Dane and Pratt (2007) argue that intuition will be more likely to function as an effective component of decision making in performance domains that require significant experience and complex domain-relevant schema, a description that fits the world of financial trading. Traders are also frequently engaged in decision making that is characterized by time pressure, high risk, complexity and imperfect information. In a previous study (Fenton-O’Creevy et al., 2011), the second author found that many high performing traders deploy a reflective and critical approach to the use and development of intuition, which they understand as well-founded in prior experience.

In this chapter we draw on our prior research to discuss the role of intuition in the work of professional traders. We bring together the results of our research on emotion regulation of investment bank traders (Fenton-O’Creevy et al., 2005, 2011, 2012; Vohra & Fenton-O’Creevy, 2011) with research on expertise and affect-based intuition (Baylor, 2001; Dane & Pratt, 2007; Simon, 1987; Sinclair & Ashkanasy, 2005; Weiss & Cropanzano, 1996) to argue that since more effective emotion regulation is associated with greater experience and more effective use of emotions in decision making (Fenton-O’Creevy et al., 2012) and emotions underpin the use of intuition (Lieberman, 2000; Sinclair & Ashkanasy, 2005), then effective emotion regulation will be essential in the deployment of expert intuition.

### ***INTUITION AND EMOTION***

Dane and Pratt (2007: 40) define intuition as ‘affectively charged judgments that arise through rapid, non-conscious, and holistic associations’. The expertise literature has also focused on the important role of expert intuition in expert performance; understanding intuition in this context as founded on implicit learning and the encapsulation of explicit knowledge into automatic perceptual processes (see, e.g., Schmidt & Rikers, 2007). This literature emphasizes the way such intuition develops over the course of a career. For example, Salas et al. (2010: 944) define expertise-based intuition as ‘the intuitions occurring at [the] later stages of development [of experience] where the decision maker has developed a deep and rich knowledge base from extensive experience within a domain’. Baylor (2001) similarly suggests that use of intuition in early stages of a job/career is ‘immature’ as it is not supported by domain-specific knowledge. Baylor (2001) reported that as the decision maker develops abstract rule-based domain knowledge, the prominence of intuition decreases. However, in the later stages of experience, intuition again becomes a dominant factor due to the decision maker’s accumulated experience, also referred to as educated intuition by Hogarth (2001).

However, while much attention has been paid to the nature of cognition in expert performance, the expertise literature hardly considers the role of emotion. For example, examining the index of *The Cambridge Handbook of Expertise and Expert Performance* (Ericsson, 2006) reveals very few references to emotion or affect; and these are all peripheral to the main arguments of the chapters, which contain them. Some more recent accounts, which focus on expert intuition, have begun to redress this lack. In particular, Chassy and Gobet (2011: 198) have proposed a central role for emotions in expert intuition and suggest that ‘intuition lies at the crossroads between perception, knowledge and emotional

modulation'. They note the experimental and neuroscience evidence for the role of affective weighting in long-term memory, storage and retrieval. They argue for a biologically based view of intuition in which 'information captured by perception, plus the knowledge activated by resonance, and the knowledge activated by emotional saliency are integrated into one single representation which points to a solution' (Chassy & Gobet, 2011: 207). In their model, emotion regulation plays a key role as the emotional system fine-tunes attentional processes and modulates the propagation of information in memory. They also note that different facets of a problem will generate multiple, potentially different, emotional responses that require integration.

Other neuroscience evidence suggests a link between intuition and affect through activation of basal ganglia in the human brain. Lieberman (2000) argued that positive affective stimuli and positive emotional experiences activate basal ganglia and the same neural mechanisms play a key role in giving rise to experience-based and affectively weighted non-conscious associations that underpin intuitive judgements.

### ***INTUITION, EMOTIONS AND FINANCIAL TRADING***

There are several conditions under which intuition is likely to be more accurate (Salas et al., 2010). A decision maker is most likely to benefit from using intuition when his or her implicit knowledge adds above and beyond what explicit rule-based learning can account for (Plessner & Czenna, 2008). 'Task features inducing intuitive processing include large sets of redundant cues presented simultaneously where there is no organizing principle' (Salas et al., 2010: 950), a common characteristic of trader's decision making. Additionally, Dane and Pratt (2007) assert that intuition will be more effective in judgemental tasks. 'Intuition is most likely to be effective when the situation is complex ... if a task is simple enough, consciously applying a logical rule is likely to be more effective than the use of intuition' (Salas et al., 2010: 950). Tasks with many solutions varying in degrees of acceptableness

favour intuition and those with a clear criterion for success favour deliberation (Dane & Pratt, 2007). Khatri and Ng (2000) found that the use of intuitive synthesis was positively associated with organizational performance in an unstable industry but negatively in a stable industry. Time pressure and the environment surrounding the task has also been identified as important to use and effectiveness of intuition (Hammond, 2000). Time pressure increases reliance on intuition primarily because decision makers simply do not have the time to engage in purely rational models (Lipshitz et al., 2001). Intuition is thus more likely to be effective in judgemental tasks and complex situations, where the task at hand may have many possible solutions and in an industry beset with instability and time pressure. These features are characteristic of traders' decision making.

Bruguier et al. (2010) attempted to understand the role that intuition and non-conscious processes play in traders' decision making through a series of functional magnetic resonance imaging (fMRI) and other related experiments. They posit that financial markets are occupied by insiders (those with advance knowledge of information that can effect stock prices, e.g., managers of the firm in question) and uninformed traders (those who depend on cognitive and affective abilities to interpret market data to reach decisions). Bruguier et al. (2010) argued that in the process of decision making, traders could not totally rely on information and data as by the time they reach a decision based on information available in the open market, they might have lost the advantage that they could gain from a speculative decision. Thus, Bruguier et al. (2010) suspected a role of non-conscious brain processes that traders employ to interpret cues in the environment. In their simulated experiments employing brain mapping, market data, mathematical capabilities etc., they found that trading decisions are reliant on 'Theory of Mind', which is the 'human capacity to discern malicious or benevolent intent' (Bruguier et al., 2010: 1703). They argued that while trading, the paracingulate cortex, the most frontal and medial area of the cortex (Theory of Mind areas of

the brain) became activated rather than the striatal and the anterior insular regions, associated with risk and reward tasks, respectively (Kuhnen & Knutson, 2005), the most common tasks in financial decisions. Bruguier et al. (2010) suggested that Theory of Mind is closely associated with intuition as it relies on pattern recognition. Thus, they argued that trading employs a great degree of intuitive judgements.

Evidence for the role on intuition in traders' decisions was also found in a large study by the second author and colleagues (Fenton-O'Creevy et al., 2011). We interviewed 118 traders in four investment banks. Traders frequently spoke about 'gut-feel' and other visceral responses to markets. Many discussed intuition in terms of emotional reactions to market situations. For example:

*[W]ithout a doubt, some of the best bargains are the ones you don't do! You know they're bad bargains. You know. It's a gut feel. You've looked at the playing field and you just know this is a bad bargain.*

*I think what a trader has to have is ... this nose for opportunities. If an opportunity comes along you have to be able to spot it and see it and sometimes people you typically find in this business – an opportunity is there and they can't see it and then it's taken by someone else and it's like oh yeah, that was a good idea but it is gone.*

*For me intuition is the feeling of what to pay attention to, which things to care about. When you start you care about the full range of information; you don't know what to pay attention to.*

*You have to trust your instincts and a lot of the decisions are split second so you need to know where the edge is and what you are going to do about it. Having a feeling is like having whiskers, like being a deer; just hearing something that the human ear can't hear and all of a sudden you're on edge. Something somewhere just gave you a slight shiver, but you're not quite sure what, but it's something to be careful about, something's around. It is a certain type of intelligence, but more about intuition.<*

More experienced traders tended to understand their intuitions as drawing on experience unconsciously:

*I think many people do say they're gut-feel traders but perhaps they're not analyzing what they're actually thinking and they're seeing a lot of customer flow and a lot of buyers and they probably don't necessarily realize the reasons why they want to buy. But there are very good traders that say they're trading off gut feel that I believe actually have probably reasonable information, reasonable thoughts behind it but they wouldn't literally toss a coin.*

Traders' accounts also often emphasized the inter-relationship of feelings and perceptions. For example:

For me key information typically is a sentiment that is quite subjective. You tend to observe. For example: if you are watching the price action of a futures market and there is good news in the market but the market fails to rally significantly when it should have, it tells you that perhaps people are sitting on long positions and if you cannot rally on good news it would not take a lot to make the market go down. This is a subjective feeling that you develop and the key to it is continuity. Putting on a trade where some direction is involved is almost like reading a book, you can't pick the book up in the middle and expect to understand what is going on. You need to read it from the beginning and you can't just skip a couple of pages. Anybody's success at doing that is due to following the markets minute by minute, day by day. Time spent away from the markets is something that you need to try and catch up on. I am always reading the newspapers, if not in the morning or through the day, at 12 at night if needed to get some sense of continuity. Filtering the information is about lateral thinking; the markets are global and inter-related.

We split the sample by experience and performance and paid particular attention to the ways in which novice traders and other lower performing traders versus experts (experienced high performers) characterized their use of intuition.

High performing expert traders were just as likely as novices to refer to their use of intuition and their visceral and emotional reactions to market information. However, where they discussed intuitions, they commonly understood them as based on experience and described subjecting them to critical reflection and combining them with rational analysis. For example:

*If I do fancy a stock – you have a feeling, it feels right, it has done nothing for like two or three months and you’ve seen sellers and they start to dwindle and it is just stagnant and then you have a look on the charts, you refer to the technical side as well as the emotional side of the trade. So you know a combination of technical and emotional as well as what the analyst thinks, as well so you sort of bring the instruments you have available to you to make the decision rather than the snap [snaps his finger] I fancy buying that.*

*I may examine opportunities based on intuition that something is going to happen, but the decision is based on something I think is rational.*

This contrasted with the tendency of low performing traders to either dismiss intuition entirely or to see it as a rather mysterious process. As one experienced but lower performing trader noted:

*It’s almost like a sixth sense. Something comes over you and you feel like – yes I know they’re going to be looking to buy these later on or looking to*



*sell these later on.*

### **MISLEADING EMOTIONS**

Our discussion so far has emphasized the positive role of intuition as emotional signals and processing, which encapsulate perceptions founded in prior experience. However, emotional signals can also mislead. A wide body of judgement and decision-making literature identifies emotions as detrimental to effective decision making. Emotions can bias information retrieval (Meyer et al., 1990), directly bias the cognitive processes engaged in decision making (Shiv et al., 2005), bias the value attached to outcomes (Gray, 1999) and significantly modify risk perceptions and behaviour (Lerner & Keltner, 2001).

This more problematic impact of emotion on traders' work was also clear in our research. For example, in a recent study of 17 traders in two banks (Vohra & Fenton-O'Creevy, 2011), traders described some key ways in which strong emotions could adversely affect their trading decisions.

- **Forced trading.** This is the act of entering impulsive trades, which the trader does not have a lot of conviction for in an attempt to recover the real or notional loss and the associated significant negative emotion. Such trading or investing tends to be impulsive and panic-driven rather than opportunity-driven.
- **Path dependence.** Especially for inexperienced traders losses can lead to strong negative emotions. These can have two kinds of effects. In extreme cases, the loss can lead to a crisis of confidence. More commonly, it triggers loss aversion and leads to increased risk taking to 'win back the loss'.
- **Self-doubt.** Losing money over a period of time can be emotionally and mentally challenging as traders find themselves in a vicious cycle of losing money and losing even more money as a result of lost confidence.

- Dishonesty with self. Emotional attachment to trades and investments and resistance to experience the emotional pain associated with admitting one's mistake can make a trader stay committed to a wrong decision, well beyond the point of sensible exit from a trade.
- Inability to stick to planned strategies. Many traders describe the experience of changing a planned strategy in the emotional heat of the moment only to realize later that they had no rational basis for doing so.

### *THE ROLE OF EMOTION REGULATION*

Our findings from trader studies are also consistent with Chassy and Gobet's (2011) claim for the central role of emotion regulation in intuition processes. As seen from the findings we note above, a central challenge for traders is to benefit from experience-based emotion-mediated signals in a challenging fast-paced environment while avoiding the decision-traps that poorly regulated emotions can lead to.

Consistent with Chassy and Gobet's suggestion of a central role for emotion regulation in expert intuition, we found major qualitative and quantitative differences in how novice and expert traders regulate their emotions (Fenton-O'Creevy et al., 2011, Vohra & Fenton-O'Creevy, 2011).

Novices were often initially inclined to self-present as lacking strong emotions and as being highly rational, only later in interviews they described the intense emotional highs and lows they experienced including in some cases extreme anxiety and fear to the extent of vomiting in the restrooms. Once novices did describe their emotional reactions to trading, they either expressed difficulty in regulating their emotions or described strategies such as getting out of the situation (leaving the desk), suppressing reactions with drugs (going for a cigarette) or trying hard to avoid any expression of emotion. Broadly, novices' regulation strategies were consistent with the two strategies Gross (1998) describes as situation avoidance and expressive suppression in his stages model of emotion regulation.

This novice trader describes both strategies:

*I think there is a strong emotional element to trading. I think that anyone who's doing it properly and has got their head screwed on is doing everything they can consciously to overrule that, and if I feel that I'm trading emotionally I will walk off the desk, have a glass of water, walk up and down the street and then come back and make decisions when I'm hopefully not emotional.*

In contrast, expert traders were commonly very comfortably talking about their emotions, often describing earlier periods in their careers where emotions were more intense and out of control. Typically, these experienced high performers described managing their emotions by reframing situations (in the Gross model reappraisal) or willingness to bear negative emotions in the interest of persisting with a difficult situation. For example:

*Big losses and big gains can swap around fairly quickly and once you understand that then you stop concentrating on the loss and you start concentrating more on how to make money back ... One big trade is not going to make anyone and one big loss doesn't destroy you.*

*I had one very bad year from which I learned quite a lot. I learned that the overshooting can go on for a very long time, it can be very painful; you can hit risk limits ... I did not want to get out of the trades so kept the trades and then next year they made more money than they lost. I don't think I panicked, but I was getting calls from the CEO. Reason prevailed in the end. Emotionally, it was not easy to cope with. There were times when the desk was down close to \$100 million, I lost almost that much in days. I was under a lot of pressure from New York because they did not understand my positions, but in the end, we managed to keep the positions and made money the next year.*

This pattern of more effective emotion regulation strategies among expert traders is consistent across interviews with around 150 traders in six different banks. Nonetheless the evidence relies on self-report. However, in a further study of 28 traders in two investment banks, we fitted traders with heart-monitors and monitored electrocardiogram (ECG) signals over multiple days trading.

Moment by moment heart rate variability (HRV) can be considered a proxy for the central autonomic network's regulation, via inhibition, of the timing and intensity of an emotional response in response to environmental stimuli (Appelhans & Luecken, 2006; Geisler & Kubiak, 2009; Hansen et al., 2009; Moses et al., 2007; Utsey & Hook, 2007). Power spectral analysis of ECG can be used to separate out a high and low frequency band. The high frequency band (HF HRV) corresponds to the frequency of respiration (0.15–0.40 Hz) and primarily reflects the activity of the parasympathetic nervous system (PSNS), due to respiratory sinus arrhythmia (RSA), causing the gating on and off of PSNS effects on heart rate during the breathing cycle. Thus HF HRV indexes moment by moment regulation of response to stimuli. Higher levels of HF HRV are associated with greater moment by moment emotion regulation.

We found that all traders had greater difficulty with emotion regulation (as measured by HF HRV) when markets were more volatile. However, consistent with our qualitative results, there was a significant relationship between experience and HF HRV such that more expert traders appeared to regulate their emotions more effectively, responding flexibly moment by moment to market events (Fenton-O'Creevy et al., 2012).

## *CONCLUSION*

We have argued from our research that expert intuition plays an important role in the fast-paced and complex world of financial trading. We have presented evidence that the way traders engage with their intuition varies importantly between novices and experts and that emotions play an important role in the intuition process. The evidence from our research is that emotion-mediated perceptions based on prior experience play an important role even in the formally rational world of finance. However, the evidence is equally strong that emotions can also mislead. The most expert traders seem to have critical engagement with their intuitions and emotions that enables them to navigate these traps.

The central challenge of emotion regulation for traders is to regulate their emotions so that they can (1) maintain appropriate levels of arousal such that they can respond optimally to a fast-moving and dynamic situation; (2) manage stress; (3) avoid emotions from a prior gain or loss affecting later trading decisions; (4) maintain access to positive and negative emotions that encapsulate experience-based reactions to the market and trading challenges they face; and (5) maintain a critical engagement with their emotionally mediated intuitions in relation to markets.

These findings and arguments have important implications for future research into intuition. First, they underline the value of field research on intuition that examines real decision makers in their domain of expertise. Second, they offer some evidence for the role emotion regulation may play in the effective deployment of intuition. Future research in both the lab and field might usefully consider the role of emotions and emotion regulation. Finally, they point to the potential for integrating work on the biasing role of emotion and emotion-mediated intuition to shed further light on the conditions in which emotions aid or harm effective decision making.

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