How to Sample Behaviour and Emotions of Traders: A Psychological Approach and an Empirical Example[1]

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ABSTRACT

This paper describes an empirical approach based on psychological methodology, which assumes that individual behaviour must be studied within its natural environment. This approach is called experience sampling (ESM). To illustrate the potentials of employing ESM in the stock-trading domain, we report on observations from an explorative pilot study designed to shed light on the following issues: how outcomes of trades are perceived by traders; the reasons traders associate with good and bad trades; and how traders' moods fluctuate over a trading day. The pilot study was motivated by three circumstances. Firstly, day-traders have claimed to be victims of self-attribution bias (for example Barber and Odean, 2002). Secondly, in recent years there has been an increased interest in the role of emotions for economic behaviour and decision-making (for example Damasio, 1994; Loewenstein, 2000). Thirdly, to the best of our knowledge, ESM has not been previously applied to the area of stock trading.

INTRODUCTION

The advent of behavioural finance has meant that psychological findings have been incorporated into models as well as used as explanations for anomalies and suboptimal investor behaviour (Glaser et al., 2004). Researchers in behavioural finance often draw inferences from analyses of transaction data, which consist of thousands of trading accounts at stockbrokers, and they conclude that observed

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patterns of trading behaviour depend on various psychological tendencies (for example Barber and Odean, 2000; 2001; 2002). Such conclusions are, however, speculative, because the tendencies have not been directly observed.

Consider, for example the well-known notion of overconfidence, which is claimed to be an important determinant of sub-optimal trading behaviour (cf. Barber and Odean, 2002; Gervais and Odean, 2001). Overconfidence concerns the propensity to overestimate one's judgemental abilities (Ayton, 1998) or to think that one possesses above-average skills (Svenson, 1981). In behavioural finance, variables like gender and trading volume have been used as proxies for overconfidence (Barber and Odean, 2001; 2002). Given recent evidence that male and female business students tend to be equally overconfident (Biais et al., 2005), gender does not appear to be a reliable indicator of overconfidence. Furthermore, an unpublished study suggests that overconfidence is unrelated with trading volumes (Glaser and Weber, 2004). Thus, the claim that overconfidence governs trading behaviour has limited empirical support. It should also be noted that analyses of transaction data merely indicate performance and patterns of stock-trading behaviour; they do not give insights into the psychological mechanisms underlying investor and trader behaviour. This paper describes a methodology that provides such insights.

The remainder of the paper is organised into four parts: 1) the method of ESM is described; 2) a description of the pilot study including its rationale and data collection is provided; 3) the results of the pilot study are presented; 4) the paper ends with a discussion of the results.

DESCRIPTION OF ESM

Background

The fundamental assumption of ESM is that individual behaviour and its underlying psychological mechanisms must be studied within their natural settings. This assumption dates back to some 50 years ago when the theory of probabilistic functionalism was introduced by Egon Brunswik, an Austrian psychologist who argued that psychological research should not only consider the individual but also the environment, or the ecology, surrounding the individual (Cooksey, 1996). Briefly, the theory of probabilistic functioning assumes that individuals attempt to adapt to an ambiguous environment reflected in probabilistic cues of information and that the adaptation is achieved with some uncertainty (Cooksey, 1996). As a consequence of his methodological concern, Brunswik emphasised that experiments should involve tasks that are representative for the individual as well as for the environment. In other words, ecological validity is vital. A simple way of ensuring representative designs is to employ ESM.

The idea of ESM is simple: Subjects are asked to report on their behaviour and experiences, while functioning within their natural settings. Specifically, subjects give reports on their everyday activities and adherent psychological processes such as attitudes, emotions and values. The following three research

studies exemplify ESM. Sjöberg and Magneberg (1990) asked 152 subjects (for example students and retired people) to provide reports, five times per day during a week, on everyday actions and adherent values and emotional reactions. Using pocket computers Totterdell (1999) prompted 33 professional cricketers to rate their mood four times per day while taking part in a game spanning four days. Hogarth (2005) studied decision-making behaviour in everyday life by prompting 13 managers and 11 students, via messages to their mobile telephones, to describe their decisions, confidence in these decisions and feedback.

Different Techniques of ESM

There are three types of experience-sampling designs (Bolger et al., 2003; Scollon et al., 2003). Firstly, subjects are required to regularly report on their behaviour and experiences at pre-specified intervals (for example hourly or daily). In a study of mood and risk-taking (Hockey et al., 2000), for example, subjects were instructed to keep daily diaries of their mood. This approach is referred to as interval-contingent sampling. A disadvantage is that the variation of experiences might not be captured as subjects try to estimate their global or average scores.

Secondly, subjects may complete self-reports once a certain event occurs (for example conflicts or intimacy). For instance, football fans might be asked to describe their feelings when their favourite team scores a goal or loses a cup match. Called event-contingent sampling, this approach demands that the triggering events are clearly defined (Bolger et al., 2003); otherwise the subjects might fail to report relevant cases or they might report cases excessively.

Thirdly, subjects may be prompted by randomly sent signals to complete self-reports (cf. Hogarth, 2005; Sjöberg and Magneberg, 1990). This type is referred to as signal-contingent sampling and is advantageous, as it captures the variability of experiences (cf. Scollon et al., 2003), given sufficient numbers of responses. In such designs, the number of signals per day is an important issue. Too many signals may discourage subjects from taking part or encourage them to fake self-reports. Signal-contingent sampling studies have generally used between four and eight prompting signals (Beal and Weiss, 2003).

Advancement in technology has improved the bases of ESM. In the 1970s when this method was introduced, electronic signalling devices (for example beepers) and a booklet of self-report forms were given to research subjects. This procedure was costly and difficult, as the devices are expensive, require programming and maintenance, and the subjects need to be trained (Bolger et al., 2003). Given the wide availability of mobile telephones, beeping devices are no longer needed, as subjects can be prompted by simple SMS messages. Although this approach facilitates the use of ESM, it requires automatic transmission of SMS messages at pre-determined or random moments. In addition, it still demands that the subjects have obtained a booklet of forms in advance.

Feldman et al. (2001) have developed an approach of computerised ESM in which data are collected by handheld computers. Throughout the data collection period, subjects carry these devices and record their experiences directly on the computer. The responses and reaction times are stored on the computers and later transferred to the researcher. A benefit with computerised sampling is that reaction times can be measured precisely and accurately, something that might not be the case for the paper-and-pencil design.

The Advantages and Disadvantages of ESM Methods

Like other research methods, ESM has its advantages and disadvantages. Scollon et al. (2003) discussed four major strengths. Firstly, the problem of retrospection that has plagued data based on self-reports can be reduced as subjects record their experiences in immediate connection with their activities. In general, it is assumed that the less time that has passed between the action and the self-report, the less risk for memory and selection bias. Consequently, ESM makes self-reports more reliable, especially if signal-contingent sampling is used. Secondly, this method makes it possible to gain insights into the underlying factors of behaviour (for example see Hogarth, 2005; Sjöberg and Magneberg, 1990). Thirdly, the level of ecological validity is strongly increased with better possibility for generalising research findings. Finally, psychological processes can be analysed with respect to between-subjects as well as within-subjects levels. In other words, it is possible to investigate how emotions, attitudes and mental states of an individual vary over time rather than restrictively investigate differences between individuals. Analyses of data collected by ESM may consider the between-subjects effects and the within-subjects effects, implying that statistical methods such as repeated measures ANOVA, multi-level models and panel-data analyses may be used (cf. Bolger et al., 2003).

Experience sampling also has disadvantages. On the whole, the disadvantages concern issues related to subjects and situations (cf. Scollon et al., 2003). Because ESM requires commitment of subjects for a longer period, the method is effortful for them. Although a single self-report form may take little time to answer (for example about five minutes), the task of responding to several forms over a period of weeks (for example six forms per day in two weeks) means a subject has to allocate several hours (for example seven hours) to participation. Therefore, many studies employing ESM have had fewer subjects than in other field studies (cf. Beal and Weiss, 2003).

Due to the level of commitment needed there may be problems with response compliance. One measure to increase commitment and compliance could be to provide monetary incentives. Alternatively, subjects might be more willing to take part if they understand the importance of the study, but they should, of course, not be aware of the hypotheses (cf. Scollon et al., 2003). Another subject-related concern is that ESM may intrude into people's private lives. In its simplest form, this intrusion means that a signal may

distract subjects from carrying out activities (for an example, see Sjöberg and Magneberg, 1990).

The main situational concern is that the sampled data may be distorted by subjects who complete self-reports at one single occasion rather than recording their experiences when prompted (Scollon et al., 2003). This tendency may be more likely to happen when paper-and-pencil designs are used than when computerised ESM is used. A simple precaution would be to ask subjects to return self-reports on a daily basis. Alternatively, subjects record the time when answering the self-reports, enabling evaluation of the time lag between signals and responses.

DESCRIPTION OF PILOT STUDY

The pilot study was motivated by three circumstances. Firstly, day-traders have claimed to be victims of self-attribution bias (for example Barber and Odean, 2002). Self-attribution bias is the tendency to associate successes with personal factors (for example abilities and skills) and failures with environmental factors (for example bad luck and coincidence) (see Kelley and Michela, 1980). Social psychological evidence points out that this tendency is almost universal (cf. Kelley and Michela, 1980; Wärneryd, 2001). When day-traders evaluate their achievements, they may believe that their good and bad trades are due to factors inside and outside their control, respectively (cf. Barber and Odean, 2002). However, there is little empirical support for this claim.

Secondly, in recent years there has been increased interest in the role of emotions for economic behaviour and decision-making (for example Damasio, 1994; Loewenstein, 2000). Emotions are affective states triggered by conscious or unconscious cognitive appraisals and often result in physiological responses. On the whole, emotions and moods are similar, except that emotions are less durable but more intensive than moods (Bagozzi et al., 1999). Positive affect may lead to better decisions (Isen, 2000), though it may also encourage simplified information-processing and, accordingly, poor decisions (Schwarz, 2000). Moreover, feelings are argued to be important determinants of risky decision making (Loewenstein et al., 2001). Two published empirical investigations have looked at the role of emotions for trading. One study documented that body temperature, respiration and pulse rates of professional traders changed as they were trading currencies and that the changes were linked to market events (Lo and Repin, 2002). Another study showed that subjects induced to be in a sad mood performed better on an experimental market than subjects stimulated to be happy (Au et al., 2003). Besides these two studies, there is little research on moods of traders.

Thirdly, to the best of our knowledge, ESM has not been previously applied to the area of stock trading. Apart from the aforementioned studies by Hogarth (2005) and Sjöberg and Magneberg (1990), related studies in the area of human resources management suggest that the method seems to be appropriate to employ in research on investors and traders. Using ESM, Teuchmann et al. (1999) studied work demands and emotional reactions of accountants.

Recently, Ilies and Judge (2002) relied on ESM to collect some 1,900 observations from 27 professionals. They established that mood and job satisfaction were positively correlated (on between-subjects and within-subjects levels) and that this relationship was partly influenced by personality factors.

Participants

Despite difficulties, five male Swedish day-traders were recruited to take part on a voluntary basis and without any economical incentives. Those aged between 25 and 35 years had stock-trading experience ranging from 6 to 12 years. They spent between 50 and 70 hours per week on trading and related activities, such as corporate analyses and book-keeping. The participants operated from different trading rooms situated in separate locations.

Procedure

The pilot study used the approach of signal-contingent sampling. Data were collected for a period of ten trading days in October 2003, a period when the index of the Stockholm Stock Exchange (henceforth SSE) went up 0.72 points. The five participants were told that during this period they would receive six daily SMS messages on their mobile telephones prompting them to respond to three types of short questionnaires: forms A, B, and C. The number of daily signals was chosen with respect to earlier research (for example Sjöberg and Magneberg, 1990; Hogarth, 2005) and to the hectic working condition of traders. Form A and Form C were to be answered before the opening and after the closure of the SSE, respectively. Form B was to be answered at four random moments during the opening hours of SSE. The forms were handed to the participants before the data collection began.

A software program sent out the daily messages, which followed a standard format, for example 'Please respond to Form A'. Two messages were sent at two fixed moments: 1) in the morning (09:10) before the opening of the SSE and 2) in the evening (17:40) when the SSE had closed. The remaining four messages were sent at random moments (identical for the participants) between 09:40 and 17:30. The software ensured that those SMS messages were transmitted with intervals of at least 20 minutes. Every participant received 60 (10 + 40 + 10) messages, meaning that each of them had the task of completing 60 questionnaires.

Questionnaires

Form A

Designed to be answered before the opening of the SSE, this form involved questions with regard to 1) expected development of stock index and confidence in this prediction, 2) expected trading performance of the day and confidence in this expectation and 3) mood.

Form B

This form was filled out during the day. The participants were asked to think of a recently completed trade and respond to some questions regarding the

following issues: 1) time when answering the form, 2) name of shares, 3) number of shares, 4) time when recent trade was completed, 5) trade outcome, 6) reasons for the trade outcome and 7) mood at the time of completing the trade.

Form C
Designed to be answered when the SSE had closed, this form included questions with respect to the following topics: 1) actual development of stock index, 2) actual trading result, 3) reasons for trading decisions, 4) evaluation of trading results, 5) risk taking and 6) mood.

Measures
As described above, the three types of questionnaire included several measures, but this paper only considers the following measures.

Trade outcomes
When receiving the randomly sent SMS, the participants were asked to rate the outcome of the recently completed trade on a six-point scale with the endpoints 'very negative' (1) and 'very positive' (6). Admittedly, this measure was subjective and might deviate from the actual return. Nevertheless, the measure had relevance as it reflected the psychological values of trades (cf. Sjöberg and Magneberg, 1990).

Trade amounts
The participants also gave details about the name and the number of share. To calculate the amounts of the sampled trade, the closing price at the end of the respective day was used.

Reasons for trade outcomes
Connecting to the rating of their trades, the participants were asked to state the perceived reasons for the outcomes of the recent trades by selecting two of six alternative factors: 1) 'brain work', 2) 'personal experience', 3) 'sense of knowing the stock market', 4) 'unpredictability of the stock market', 5) 'ambiguous information' and 6) 'too risky'. In line with the theory of attribution bias (cf. Kelley and Michela, 1980) the three former (latter) factors were assumed to relate to personal (circumstantial) reasons.

Trading performance
At the end of each day, the participants were asked to report how much money they had earned (or lost) from trading. By all means, this subjective measure is a rough and slightly biased estimate of performance. Objective calculations of the daily trading profits (losses) would have been preferred, but that would have required access to the transaction records and thus violated the privacy of the participants.

Mood

Mood was assessed on a measurement including the following six emotional dimensions: 1) tense v relaxed, 2) indifferent v interested, 3) sad v happy, 4) annoyed v restrained, 5) dearth of ideas v full of ideas and 6) surprised v acknowledged. The first three dimensions were taken from Sjöberg and Magneberg (1990), whereas the latter three dimensions were chosen with respect to the working condition of traders. Each dimension was rated on separate six-point bipolar scales. Averaging the six dimensions resulted in a measure called mood scores, where a high score reflected a more positive mood. Across the three types of questionnaire and the five participants, Cronbach's alpha was 0.76; indicating a fairly good level of reliability (Peterson, 1994).

Response Compliance

In total, the participants responded to 244 out of the 300 SMS messages. Two participants did not engage in trading activities during two days. Adjusting for those non-trading days resulted in a mean compliance of 88.4 per cent. Individual responses ranged from 75.0 per cent to 98.3 per cent. While the messages sent in the morning and the evening had an average compliance of 100 per cent, the mean rate of messages transmitted at random occasions was lower, 82.6 per cent; leaving a sample of 152 trades to analyse.

Chi-square tests on response frequencies showed that the participants were no more likely to respond on particular days, or on particular week days. The randomly sent messages were categorised into four two-hour phases: 09:30–11:29, 11:30–13:29, 13:30–15:29 and 15:30–17.30. This categorisation resulted in a variable called day phases. Chi-square test did not find any significant tendencies that participants would be inclined to respond on a specific day phase.

In Form B, the participants recorded both the time when they responded and the time of completed trades. Ideally, the difference between these points of times should be small, as that would indicate a greater chance that the collected data were not contaminated by selection bias or memory distortions. For all participants, the median (mean) difference was 12 (46) minutes. One participant stated response time and trade time in only 11 out of 39 cases, indicating potential concern for memory bias. Kruskal-Wallis test showed that the time differences of the other participants were similar.

<div align="center">RESULTS OF PILOT STUDY</div>

Outcomes and Amounts of Sampled Trades

The 152 sampled trades concerned 51 shares listed on the SSE. The two commonly traded shares of the participants were Nokia (7.2 per cent of the sampled trades) and Atlas Copco (6.6 per cent). For all participants, the median (mean) amounts of trade were €30,218 (€55,832) with minimum and maxi-

mum values of €353 and €1,081,651, respectively. The median amounts of the participants ranged from €15,963 to €48,853. As indicated by the Kruskal-Wallis test, the trading amounts differed significantly between the participants (mean ranks = 87.11, 63.40, 55.19, 86.94 and 84.87, chi-square (4) = 16.28, p < 0.01). On average, the subjectively rated trade outcomes was 3.57 (SD = 1.03). The participants did not differ with respect to trade outcomes. Amounts and outcomes of the trades were unrelated.

The mean values concerning trade outcomes for the day phases were 4.00, 3.62, 3.39 and 3.22 (SDs = 0.90, 1.12, 1.10, 0.80). An ANOVA-model with trade outcomes as the dependent variable and day phases as the independent variable suggested significant differences (MS = 4.21, F (3, 150) = 4.28, p < 0.001). Thus trades made before noon tended to be rated more positively than trades completed later in the day. Median values of trade amounts for the day phases were as follows: €26,950, €41,835, €15,367 and €42,477. Kruskal-Wallis non-parametric test indicated that these values differed significantly (mean ranks = 67.38, 83.46, 56.93 and 83.20, chi-square (3) = 10.25, p < 0.05). It seems, accordingly, that the participants put different amounts of money at stake at different times of the day.

Other sources of time effects studied were weekdays and the two weeks effects. Mean rating of trade outcomes for Monday, Tuesday, Wednesday, Thursday and Friday were not significantly different and ranged from 3.38 to 3.91 (0.92 < SDs < 1.10). Similarly, trade amounts did not differ with respect to weekdays: the median values varied between €25,321 and €40,688. No differences in trade outcomes and amounts could be found with regard to the two weeks.

Perceived Reasons for Trade Outcomes

For each sampled trade, the participants selected two factors that they believed could explain the outcomes. 'A sense of knowing the market', 'brain work', 'personal experience', 'unpredictability of the market', 'ambiguous information' and 'too risky' were mentioned as reasons in 23, 20, 19, 19, 15 and 4 per cent of the sampled trades.

To test whether the participants were inclined to attribute good (bad) trades with factors inside (outside) their control, the measures denoting reasons were transformed into a variable that could accommodate three levels: environmental factors, personal factors and a combination of these factors. The third level was, however, eliminated due to lack of observation. The resulting binary variable was then used to analyse to what extent the participants were prone to self-attribution bias. As regards trade outcomes, the mean values for environmental factors (n = 40) and personal factors (n = 111) were 2.58 and 3.94 (SDs = 0.71 and 0.88). This difference was strongly significant as shown by an ANOVA-model (MS = 54.41, F (1, 150) = 77.89, p < 0.001); implying that personal factors were associated with better trade outcomes. In relation to trade amounts, no significant difference could be found between environmental factors and personal factors.

Table 6.1: Multiple Regression Analysis for Various Effects on Mood (N = 151)

Independent variables	Unstandardised Beta weight	T-values
Constant	2.14	5.57***
Trade outcomes	0.34	7.45***
Log. Trade amounts	0.03	0.79
09:30 – 11:29	0.28	2.06*
11:30 – 13:29	0.21	1.60
13:30 – 15:29	0.09	0.64
Tuesday	0.10	0.77
Wednesday	0.29	2.09*
Thursday	-0.13	-0.86
Friday	-0.12	-0.81
Adjusted R²	0.37	

Note: All independent variables, except for trade outcomes and trade amounts, were coded as dummies. The variables representing evening (15:50–17:30) and Monday were automatically excluded from the analysis by the statistical software (SPSS).

Mood Linked to the Sampled Trades

Across all participants, the mood scores linked to the sample trades averaged to 3.84 (SD = 0.69). Mean mood scores of the participants ranged from 3.61 to 4.32 (0.60 < SDs < 0.81). An ANOVA-model suggested that the participants had different mood scores (MS = 2.01, $F_{(4, 151)}$ = 3.97, p < 0.01). As expected, mood correlated positively with trade outcomes (r = 0.59, p < 0.001). All participants had this emotional tendency to a varying degree (0.44 < r < 0.80). In contrast, the correlation between mood and (logarithmic transformed) trade amounts was insignificant and similar for all participants.

A multiple regression model was performed to evaluate simultaneously the effects of trade outcomes, trade amounts and points of time. The dependent variable consisted of the mood scores linked to the sampled trades, while the independent variables were trade outcomes, logarithmic transformed trade amounts and dummy-coded measures representing day phases and weekdays. As described in Table 6.1, the regression model accounted for 37 per cent of the variance and trade outcomes were the most significant predictor. Mood associated with the trades tended to be more positive at the start of the day. Wednesday appeared to have slightly but significantly higher mood scores than the other weekdays.
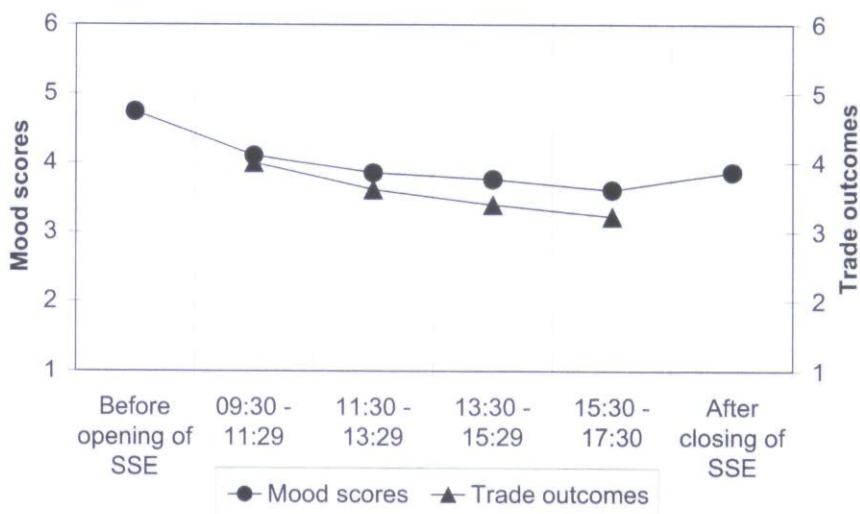
Trading Performance

In the evening when the SSE had closed, the participants recorded how much money they had earned from trading. Whereas four participants responded with amounts, one participant chose to answer on his own scale with three steps: loss, break-even and profit. The trading amounts of the other participants ranged from a loss of €32,100 to a profit of €36,700 with a median profit of €920. Using the aforementioned three-point scale, the reported earned amounts were transformed into a categorical variable, which had the following mean values concerning loss and profit: €-12,714 and €3,813 (SDs = 16.71 v 8.51). Across all participants, the frequencies for loss, break even and profits were 21 per cent, 9 per cent and 70 per cent respectively; a suggestion that the participants might be able to successfully make money on their trading (at least for the period when data were collected). However, this observation could be biased because the participants might have failed to consider transaction costs and other costs associated with trading.

Mood Fluctuation of the Trading Day

The participants reported their mood before the opening and after the closing of the SSE. On average, the mood scores were 4.74 and 3.86 (SDs = 0.39 and 0.71). By integrating the mood scores of the sampled trades with those of the morning and evening, it was possible to illustrate how mood fluctuated over the trading day. Figure 6.1 shows that mood dropped in the course of the day but rebounded a bit when the stock market had closed.

A repeated measures ANOVA-model involving one within-subjects variable (morning v evening) and one between-subjects variable (the five partici-

Figure 6.1: Mood Fluctuations and Trade Outcomes During a Trading Day

pants) was performed. To control for effects caused by weekdays and trading performance (losses, break-even and profits), covariates for these variable were also included in the model. The model indicated the following significant results: 1) within-subjects effects (MS = 3.50, F (1, 37) = 11.27, p < 0.01), 2) between-subjects effects (MS = 3.60, F (4, 37) = 4.10, p < 0.01) and 3) a covariate representing performance (MS = 1.73, F (1, 37) = 7.85, p < 0.01). In other words, mood scores were higher in the morning than in the evening and mood varied among the participants. In contrast to days with losses, mood scores were higher for days with profits.

A Further Test on the Link between Mood and Sampled Trades

Across the participants, Pearson coefficients of correlations were calculated between the variables of mood scores and trade outcomes. Morning mood was almost unrelated to the mood of the other day phases (0.07 < r < 0.35, n.s.), while evening mood was moderately correlated with mood scores of the noon (r = 0.47, p < 0.05) and of the afternoon (r = 0.56, p < 0.01). Evening mood was strongly linked to the trade outcomes of the phase 15:30 − 17:30 (r = 0.74, p < 0.01). The idea that positive mood would foster good trades had little support, because the correlations between mood scores of one occasion (for example morning) and the outcomes of the next occasion (for example 09:30 − 11:29) were poor and insignificant. Thus it seems reasonable to conclude that good trades lead to positive mood rather than the other way around.

<div style="text-align:center">DISCUSSION</div>

The aim of this paper has been to illustrate the usefulness of using ESM as a means of investigating behaviour and related psychological processes in stock-trading. As illustrated by the observations of the pilot study, the method gives further insights into the reasoning and emotional reactions of day-traders. Although the observations may need to be validated by additional research involving more participants and a longer period of data collection, the pilot study points out that ESM is a valuable methodology to be considered in behavioural finance.

Besides indicating that day-traders may be prone to the universal tendency of self-attribution bias (cf. Kelley and Michaela, 1980), the pilot study shows two observations. Firstly, the participating traders rated the outcomes of their morning trades more positively than those of trades completed later in the day. This observation may relate to the well-documented finding that stock returns tend to rise in the morning, then level down and finally rise again at the very end of the day (Harris, 1986). This phenomenon of intra-day effects holds also for the SSE (Niemeyer and Sandås, 1995). The intra-day effects have been argued to depend on the trading mechanism, liquidity risk management, information flow and behavioural factors (Bildik, 2001). Furthermore, the movements in the stock exchange in New York are often transferred to the stock markets on other continents (Bildik, 2001). As a result, the movement of the

SSE may be relatively easier to predict in the first hours than in the later hours of the trading day.

Secondly, the mood of the participating traders declined in the course of trading, but rose when the stock-market had closed. This fluctuation appeared to be linked to the trade outcomes in that good (bad) trades were associated with positive (negative) mood. In contrast to earlier research (for example Isen, 2000), happy mood does not foster good trading-decisions. The observed mood fluctuation does not harmonise with research on circadian rhythms, which suggests that people tend to be happier in the afternoon than in the morning (cf. Scollon et al., 2003). However, the observed mood fluctuation of the day-traders relates to a study of how the mood of accountants changed during a month at the office (Teuchmann et al., 1999).

Experience sampling seems to be useful to employ in investigating decision-making behaviour and adherent psychological processes of professionals such as managers, bankers, accountants, investors and traders. For example, the method could be used to study the complexity of decision situations faced by loan officers (cf. Andersson, 2001) and how emotions of managers fluctuate during a day at work. The advantages of using ESM in such projects are many (cf. Bolger et al., 2003). Data are captured in real-life situations with a high degree of ecological validity. The variability of behaviour, emotions and adherent psychological processes can be investigated, as data is collected on several occasions. Similarly, variations of experiences between and within individuals can be studied. As suggested by this pilot study, sending SMS messages seems to be a promising approach to prompt professionals to record their experiences while engaged in their work.

Admittedly, the pilot study has weaknesses such as a small sample of participants, an ambiguous question concerning expected and actual trading performance, and concerns about the time lag between signals and responses. Future research can readily overcome these weaknesses and could employ multiple methods whereby data analyses collected by ESM could be combined with analyses of transaction data.

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