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Abstract

Research on user training has drawn on psychological theory to understand individual differences effects. An extension of the Model of Goal-directed Behaviour (MGB) was used to test the role of Personality variables, Computer self-efficacy and Computer anxiety as antecedents of anticipated emotions, goal desires and intentions. Positive anticipated emotions were demonstrated to intervene in the relation between Computer self efficacy and goal desires.

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Individual differences in anticipated emotions, desires and intentions in approaching a computer task.

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Research on user training has drawn on psychological theory to understand individual differences effects. An extension of the Model of Goal-directed Behaviour (MGB) was used to test the role of Personality variables, Computer self-efficacy and Computer anxiety as antecedents of anticipated emotions, goal desires and intentions. Positive anticipated emotions were demonstrated to intervene in the relation between Computer self efficacy and goal desires.

Keywords

User training, Individual differences, Anticipated emotions, Goal desires, Goal intentions, Computer self-efficacy, Computer anxiety.

INTRODUCTION

The increasing need for Information Technology (IT) in organizations has resulted in mandatory use, and hence re-conceptualizing the training of the workforce of the future (Sein et al, 1999). User training researchers have identified that training issues relate to: trainee characteristics (individual differences); software characteristics: task /job characteristics (task complexity) and training strategy (Sein et al, 1999).

Individual differences are variables such as personality, demographics, context and expertise: some are stable, such as personality traits and personal innovativeness toward IT; others are malleable such as user expertise (Agarwal & Prasad, 1999; Thatcher & Perrewe, 2002). Personality traits are stable, and give persistent emotional tendencies that have an impact on users' experience of IT (Pocius, 1991). The relationship of Computer Self-Efficacy (CSE) to task performance has been well established for computer training (Mitchell et al. 1994; Compeau & Higgins, 1995). Computer anxiety (CA) has been found to mediate the relationship between situation specific traits and CSE (Thatcher & Perrewe, 2002; Vella et al, 2003).

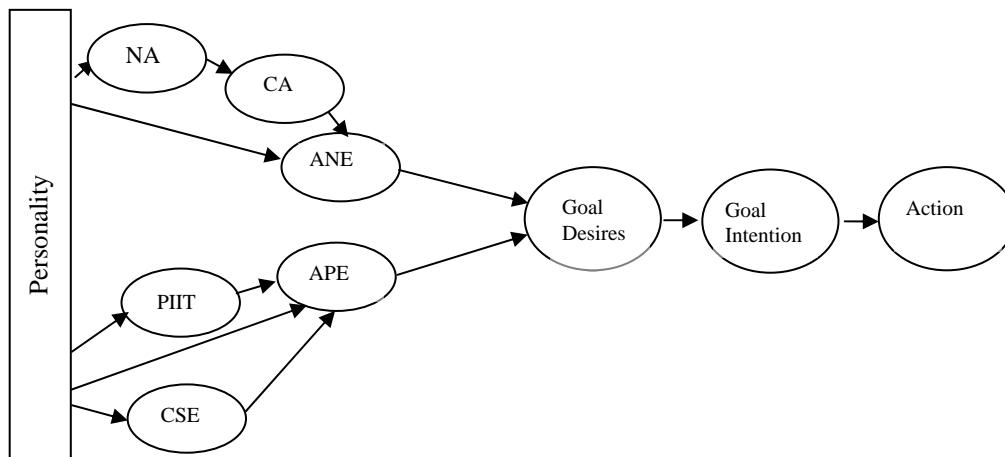


Figure 1. Model of goal directed behaviour for technology training. (adapted from the Model of Goal-directed Behaviour, Bagozzi et al, 2002). Abbreviations: PAE (positive anticipated emotions), NAE (negative anticipated emotions), CA (computer anxiety), NA (negative affect), CSE (computer self-efficacy), PIIT (personal innovativeness toward IT).

Anticipated Emotions (AE) combine elements of both cognition with affect and has been used in understanding decision making (Bagozzi et al., 2002). In the integrated model: the Model of Goal-directed Behaviour (MGB), AE are antecedents to behaviour desire, which in turn leads to implementation intention and action (Bagozzi et al, 2002). Specifically, both anticipated positive and negative emotions influence intentions and predict performance. Our model (Figure 1) draws on the MGB to suit technology training and also draws on constructs from IT literature, such as Computer Self-Efficacy (CSE: Compeau & Higgins, 1995), Computer Anxiety (CA: Heissen et al, 1987) and Personal Innovativeness in Information Technology (PIIT: Agarwal & Prasad, 1998a, 1998b) and our previous research (Vella et al., 2003). Thus our model sees the computer task (action) as part of goal-setting, part of an “implementation intention” chain planned to fulfil their “goal intention” toward “goal-directed means and behaviours” (Gollwitzer & Schaal, 1998, p.125). Desires are states that motivate toward a goal or action, intentions are differentiated by the decision process toward the goal, while implementation intention involve planning with regard to “when, where, how and how long one is to act” (Bagozzi et al, 2002, p. 173).

There are no studies to our knowledge, where AE has been tested with computer constructs CSE, CA and PIIT in the context of IT user training. A better understanding of relationships of stable traits (personality, negative affect) will allow modification of dynamic traits (AE and CSE) with psychotherapy techniques. The focus of this study is to explore how individual difference factors will effect the emotions an individual expects as well as their desire to perform a computer training task. This paper presents research in progress that tests goal desires and intentions with dynamic and stable individual differences related to computer training.

METHOD

Participants, Procedure and measures

Participants were 60 second year university students. These participants were volunteers drawn from a larger sample of 163 students whose mean age of was 22.60 years, range 18 to 48 years. Forty eight (29%) of these participants were male, 110 (67%) were female, and 5 undisclosed sex. The sample of 163 students were interviewed during a class exercise as part of subject requirement. Each participant completed a series of questionnaires including items regarding their computer experience, demographic information and the following measures. *Computer Self-efficacy* is a ten-item measure rating participants’ confidence in dealing with computers (Compeau & Higgins, 1995). *Personal Innovativeness in IT* is a four-item measure rating participants’ level of innovativeness for IT (Agarwal & Prasad, 1998). *Computer Anxiety* measure has four items rating participants’ state anxiety and associated arousal in dealing with computers (Heissen et al, 1987). *Negative Affect* was measured with a ten item rating of participants’ experience negative emotions in general (Watson, Clark & Tellegen, 1988).

A subset of 60 participants volunteered for a further study in which they completed a personality measure, two measures of AE and measures of desire to perform the task, and their intention to plan for the computer task. The IPIP is a *Personality Measure* of sub traits of Emotional Stability, Extraversion, Openness, Agreeableness, and Conscientiousness. The *Desire* and *Intention* items (3-items each) were based on Perugini & Bagozzi, (2001) and adapted for this study. *The PANAS (Positive Affect Negative Affect Scale)* is a 20 item measure of emotion terms, used here for rating the feelings that participants’ anticipate while completing the task (Watson, Clark & Tellegen, 1988). At the completion of these measures, a specified SPSS (statistical package) task was undertaken by each participant while their actions were captured by a screen capture camera (Lotus ScreenCam).

RESULTS

Descriptive statistics, reliabilities (in main diagonal) and correlation among measures were undertaken and are reported in Table 1. All the reliabilities were satisfactory with a range from .69 to .93. Low to moderate significant positive relationships were observed between positive computer use constructs, that of computer self-efficacy (CSE) and personal innovativeness in IT (PIIT), and the desire to do well in the computer task. Computer anxiety (CA) was negatively related to CSE (weakly) and to PIIT (moderately). CA and generalised Negative Affect (NA) demonstrated a significant weak positive association. The desire and intention to do well in the computer task demonstrated a significant positive moderate relationship with anticipated positive emotions

(APE). The strongest correlation, $r=.69$, $p<.000$ was found between desire and intention. The correlation between positive and anticipated negative emotion (ANE) was found to be $r = .33$, $p<.05$. In keeping with the literature this association does not exhibit a negative correlation because ANE predicts failures and APE refer to success, thus deriving a positive relationship (Perugini & Bargozzi, 2000). No associations between any personality sub-trait and computer measures were found (that is neither CSE or PIIT, nor CA were linked to any measure of personality). However, significant association ($r = 0.27$ and 0.36 ; $p = 0.041$ and 0.005 , respectively) between Conscientiousness, and the ‘desire’ and ‘intention to do well in the task’ was found.

Table 1. Descriptive statistics, scale reliabilities and correlations among the variables.

Measure	M (SD)	1	2	3	4	5	6	7	8	9	10	11	12	13
1.CSE	7.47 (2.2)	.93	-.05	-.21**	.23**	-.06	.06	.11	-.17	.04	.22	.16	.32*	.08
2.NA	21.9 (5.4)		.82	.21**	-.06	-.23	-.11	-.01	-.18	-.10	.03	.14	.12	.18
3.CA	10.09 (5.2)			.85	-.47**	.04	-.03	-.09	.20	-.10	-.04	.19	.14	.22
4.PIIT	15.18 (5.1)				.87	-.00	.17	.07	-.06	.10	.28*	.19	.07	.06
5.EmSt	28.74 (7.8)					.87	.02	.17	.15	-.07	-.15	-.33*	-.20	-.14
6.Ext	34.66 (6.9)						.87	.17	.25	.02	-.05	-.00	.07	.15
7.Op	36.88 (5.5)							.80	.43**	.23	-.04	-.24	-.23	-.25
8.Ag	42.23 (4.6)								.69	.34**	-.06	-.00	-.04	.09
9.Cons	32.69 (6.4)									.79	.23	.04	.27*	.36**
10.APE	28.62 (6.9)										.87	.33*	.41**	.31*
11.ANE	16.77 (6.2)											.88	.25	.17
12.Des	11.43 (2.7)												.76	.69**
13.Int	12.22 (2.1)													.72

Abbreviations: CSE =computer self-efficacy; NA= negative affect; CA = computer anxiety; PIIT = personal innovativeness in IT, Em = emotional stability, Ext = extraversion, Op =Openness, Ag =Agreeableness, APE = anticipated positive emotions ANE = anticipated negative emotions, Des= desire, Int = intention. (Samples size for measures 1-4: N = 163; 5-13, n = 60). ** $p < .01$, * $p < .05$.

Regression analyses based on the sample of 60 participants were used to examine the paths between key variables. Theoretically Openness, Agreeableness and Conscientiousness were expected to contribute to specific ANE and APE because they bring mental flexibility, emotional regulation, and commitment and orderliness respectively. These relationships were not observed. However, Extraversion and Emotional stability did make a contribution to anticipated emotions, and thus were investigated further and the findings reported in Figure 2.

It was hypothesised that high levels of CSE and PIIT would be experienced as positive emotions which would in turn produce AE that were positive as well. It had also been predicted that the high level of positive emotions found amongst individuals high in Extraversion would promote actual and anticipated positive emotions toward the computer task. However, the results of the regression analyses show that Extraversion and PIIT did not contribute significantly to the APE for participants in the anticipation of their computer task, while CSE approached significance ($\beta = .27$, $p=0.06$). It had also been expected that high levels of Emotional stability would contribute stability to personality facets such as vulnerability to emotions and emotional stability such as shame, worry, depression and irritability. The results failed to demonstrate significant links between Emotional stability and CA and NA and CA. However, emotional stability did predict ANE ($\beta = -.34$), while CA failed to be significantly linked to ANE in the presence of emotional stability.

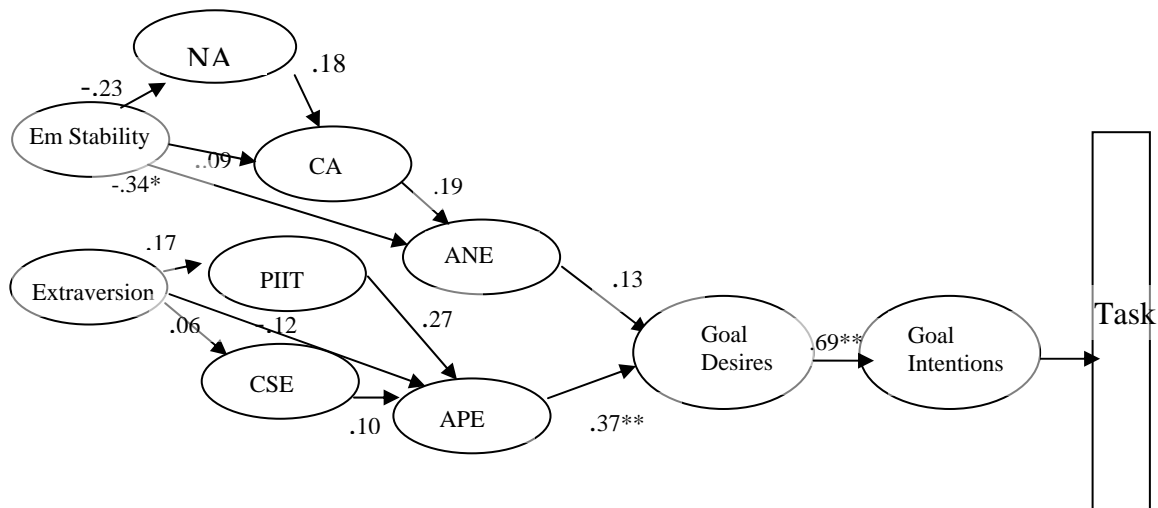


Figure 2: Relationships of Individual Differences to Anticipated Emotions , Goal desires and Goal Intentions. Path co-efficients are presented. ** $p < .01$, * $p < .05$.

Given the significant relationships, between CSE and Desires and APE and Desires, the question arose as to whether APE mediated the relationship between CSE and Desires. Given the fact that CSE does not significantly predict APE a mediation relationship does not eventuate. However we found that when both CSE and APE were linked to Desires the direct link between CSE and Desires reduced from .32 to .24 and the link between APE and Desires reduced from .41 to .36. This finding suggests the possibility of a moderating relationship which requires further exploration. Finally, the path co-efficient between Desires and Intentions was 0.69, $p = .000$, adjusted $R^2 = 0.46$.

DISCUSSION

The aim of this study was to test the MGB for technology training, specifically whether personality variables acted as antecedents to computer-based individual differences variables (eg CA, PIIT and CSE) which in turn may have influenced anticipated emotions and ultimately goal desires and intention. It was expected that generalised NA and specific CA would explain some of the anticipated negative emotions that participants would anticipate in approaching a computer statistic task in which they were relatively novice. Emotional stability (personality) was found to contribute negatively to ANE as expected but not NA and CA.

Though expected that the high positive emotions in people with high levels of Extraversion would have would increase their levels of CSE and PIIT and be positively related to Anticipated Positive Emotions, this was not found. However APE gave a significant contribution to Desires. Similar to Perugini and Bagozzi's (2001) study, we found that Desires were seen to "provide a direct impetus to Intention" (Perugini & Bagozzi, 2001, p. 94). One of their target behaviours, studying, was found to have negative anticipated emotions and to be avoidance based. In contrast, this study found that the computer task was approached with positive anticipated emotions. This difference could stem from the concreteness of the task and the immediacy of the reward, as suggested by Perugini and Bagozzi (2001). For our participants, although they were relatively novice at this computer statistic software application, this was a concrete task for which they would receive subject credit points immediately on completion. In addition this project took place toward the end of the coursework. Two limitations for this study are noted. The external validity of the model was limited by its application to a student sample. Its internal reliability was limited by measures that were self-report and the small sample size.

This study is important in providing a better understanding of the role of emotion in undertaking computer based training. An important finding is that the MGB for technology training holds promise in understanding individual differences in computer user training. This study holds implication for training, in that quality training

will impact on users' desires in performing a computer task, via their CSE and anticipated emotions. Therefore, the role of feedback and self-regulation provide new avenues for enhancing computer user training performance.

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