The Effect of Computer Anxiety on Enneagram

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ABSTRACT

The primary objective of this study is to ascertain the effect of computer stressors on the users' anxiety level and their Enneagram personality type. A set of questionnaire was developed in lieu of this. The data obtained were analyzed using the One-way Analysis of Variance. An important finding from this study revealed that the Enneagram types were affected by the computer stressors. The findings also revealed that the levels of anxiousness experienced by the Enneagram types vary. The differences in the levels were attributed to the components of the Enneagram. This is a pioneer study that applied Enneagram in rationalizing the effects of computer anxieties on users.

Keywords: Enneagram, computer anxiety, stressors, personality

INTRODUCTION

Frustration with technology is a major reason why individuals cannot use computers to reach their goal, hesitate to use computers or avoid computers altogether [23]. Many factors account for the cause of frustration among users, for example the design of the system, sufficient training and documentation and tech support [21]. Frustration may occur from typical keyboard typing errors to atypical ones like system crashes. Negative feelings such as frustration and anxieties caused by a computer have been recognized as a psychological phenomenon and works as a negative moderator for stress [27]. While good interface designs, up-to-date hardware, clear user documentations and sufficient trainings may assist in reducing the anxiety of the users for a particular incident, there is room for other methods that could impact the users' frustration. Thus, by examining the root causes of these frustrations from the psychological point of view, i.e. the personality type, developers may be able to approach their designs more effectively.

The fundamental question that this paper attempts to answer is how do individuals with different personality type perceive the effects of computer stressors? Individuals may have different views on how a computer stressor affects them – one individual might feel slightly anxious by it, while the other is severely anxious and yet another is not affected at all. The attempt to fill this gap is mainly influenced by the lack of prior studies linking personality typing methodologies, in particular, the Enneagram to computer stressors [25, 36].

LITERATURE REVIEW

Many researchers had studied on the relationship between computer anxiety and personality type. Anthony, Clarke and Anderson [1], as well as Korukonda [20], found positive correlation between anxiety and the Five-Factor Model. Anthony et al. [1] reported a positive correlation between computer anxiety and Neuroticism, whereas Openness had a negative correlation with anxiety. For individuals with low scores on Openness, Anthony et al. predicted these individuals were hesitant towards using the computer technology due to their tendency to avoid the unfamiliar and may feel challenged by the constantly changing environment of computers. However, an earlier research conducted by Hudiburg, Pashaj and Wolfe [17] indicated no direct relationship between the stressors and any of the five personality dimension with the exception of Openness. The mixed and somewhat contradictory findings of Anthony et al. [1] and Hudiburg et al. [17] prompted Korukonda [20] to examine the above mentioned relationship. Using 242 students from a private university in Western New York, Korukonda [20] found a strong positive correlation between Neuroticism with computer anxiety, whereas negative correlations were found between Openness and Extraversion with computer anxiety. The findings provided a stronger support and extended the conclusion of Anthony et al.'s [1] study.

Another type of personality typing methodology, Holland Types, was used to determine the levels of computer anxiety by Bellando and Winer [2]. Holland Types is used to determine an individual's career interests using six general career personality types. The six types, depicted in a hexagon, are: Realistic, Investigative, Artistic, Social, Enterprising and Conventional. Bellando and Winer's [2] study revealed two of the Holland types, Artistic and Social, had a significantly higher computer anxiety, while the remaining four types reported no significant differences.

In the proposed Computer Frustration Model by Bessiere, Newhagen, Robinson and Shneiderman [5], computer anxiety was included as one of the individual (dispositional) factors, alongside with other computer variables (experience, self-efficacy and attitude). Another individual (dispositional) level factor proposed was the psychological factor. However, to our knowledge, there was no study that links computer anxiety and psychological factor, especially in the personality traits of the users.

Although the Enneagram had been integrated into modern sciences, in particular to businesses and management applications, yet the Enneagram's application had been limited in the area of computing. Specifically, Enneagram had not been used to gauge the anxiety level of computer users and the type of stressors causing it. Thus, the gaps presented here lead us to this study.

RESEARCH FRAMEWORK

A research framework is proposed to test the influence of personality type on a computer user's anxiety level. Figure 1 represents the diagrammatically visualized research framework.

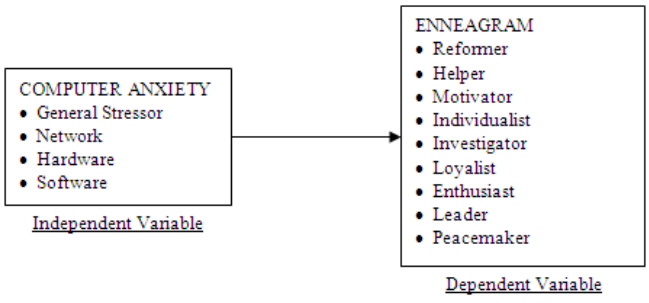

Figure 1. Research framework.

Based on the literature review conducted on computer anxiety, the computer anxiety component was extracted out to serve as the independent variable. The independent variable measures causes of the computer anxieties as it influences how a user perceives and reacts toward the anxiety. A factor analysis was conducted and 15 stressors were proposed based on common problems that a user encounters while interacting with computer stressors. The results of the factor analysis, along with other tests which include the Kaiser-Meyer-Olkin (KMO), the Bartlett's test of sphericity and the fit measures of the Confirmatory Factor Analysis (CFA) test, lead to the extraction of three factors from the analysis, and was renamed to *Software*, *Network*, and *Hardware* group. Table 1 highlights the results of these tests.

Statistical Test	Results
Factor analysis	Alpha coefficient: 0.831 (Software), 0.820 (Network), 0.794 (Hardware)
Kaiser-Meyer-Olkin (KMO)	0.886
Bartlett's test of sphericity	0.000
Confirmatory Factor Analysis (CFA) test	Chi-square = 330.831, p-value = 0.000, Ratio = 3.803, AGFI = 0.823, CFI = 0.878, PCFI = 0.727, RMSEA = 0.095

Table 1. Summary of statistical tests and their results.

Another group was formed and named to *General Stressor* to test the overall effect of the stressors on the personality types. This group contains all 15 stressors and as such, the previous three groups mentioned earlier fall under the *General Stressor*'s subset.

The Enneagram serves as the personality typing tool and will serve as the dependent variable. The Enneagram was chosen in this study over other personality typing methodologies due to several reasons. In order to measure what stressors could cause anxiety in an individual, we need to know the basic characteristics of that individual so as to better understand the true reason for the way that individual behaved. The Enneagram measures the underlying motivation of an individual, rather than on behaviours, unlike other personality typing methodologies (MBTI®, KTS, The Big Five and Global 5-SLOAN) [9, 35]. Along with that, it also delves into the negative side of the individual's personality to shed some light on the individual's faults and what he or she needs to change to address the faults [8].

While other personality typing methodologies distinguishes an individual based on their behaviours, there remains the question that two individuals may behave similarly, but for different reasons. Behaviours are influenced by social norms, hence, an individual may behave differently depending on factors such as the situation and the culture that he or she is in at that moment. Thus, behaviours may change from time to time, but the underlying motivation for behaving in that particular way remains. Measuring an individual's personality type using the Enneagram then, is said to be better, as the individual's main Enneagram type will not change [33].

We believe the Enneagram is the basic point for all other personality type measurements. As it measures motivation,

the Enneagram can be used to complement other personality type measurements, thus contributing further to understanding the nature of human beings. For example, studies had been done to correlate the Enneagram with the Jungian [19] typology [11, 12, 14, 29, 31] and also with the MBTI [9, 10, 13, 14, 18, 38]**.** This serves to strengthen our choice of adopting the Enneagram in our study.

RESEARCH METHOD

A questionnaire with three sections was developed with regards to the concepts above. Questions in Section A were in the form of either open or close ended questions, while the rest of the sections' questions were developed using close-ended format. Section A solicits respondents' standard demographic and social connotation information, working experience and experience of using the computer, daily hours using the computer and the level of proficiency on the usage of computers. These questions were administered based on the importance given in the Computer Frustration Model [5]. The data in this section were a mixture of nominal ordinal and interval in nature.

Section B contains 36 questions adapted from the scientifically validated Riso-Hudson Enneagram Type indicator (RHETI) test [28, 34] to determine the Enneagram personality type of the respondents. The RHETI is in the form of forced-choice questions which respondents have to choose from. Each choice will lead to different personality type scores and the total score will determine the most likely personality type of a respondent.

Section C contains 15 short statements which characterize a variety of stressors in working with computers. The statements were administered to evaluate the impact of the stressors on the respondents' anxiety level. The stressors administered in this section were based on the extensive research done by numerous researchers [15, 16, 22, 23, 24, 26, 32, 34]. The partial semantic autonomy scale [7] was adopted to measure the extent of respondents' anxiety level. A five-point scaling was employed for our study following similar scaling by Weil, Sears and Rosen [37]. The scaling are: 'not at all severe', 'slightly severe', 'moderately severe', 'severe' and 'extremely severe', denoted by points 1 to 5.

The population of interest in this study was working professionals from states across the Peninsular of Malaysia. The target respondents were those working professionals who are using the computers in their daily tasks. The target respondents however, did not include those under the age of 18 and above the age of 60. Those below the age of 18 are assumed to be still schooling, while those above the age of 60 are assumed to have retired, since the majority of retirees in Malaysia are 56 and above.

Respondents were not biased against gender, race, status or occupation. However, respondents are chosen to be those whose job scope requires them to use the computers for at least a portion of the workload. This is to prevent bias results for the computer anxiety level due to jitters of not having the experience in managing the computers.

The data collection was of cross-sectional in nature. The questionnaires were distributed via three main methods. The methods are outlined in Table 2, along with the total number of questionnaires distributed and returned, the rate of return and the valid number of questionnaires for each method. The final sample, after data filtration was done, was a total of 310 with the overall response rate of approximately 39.56% to be used for the statistical analyses.

Method	Total Number Distributed	Total Returned	Rate of Return	Valid Number
Hand-delivered	350	145	41.43%	128
Mail	300	97	32.33%	84
Web survey	255	116	45.49%	98

Table 2. Summary of data collection.

RESULTS AND DISCUSSION

The effects of computer stressors on individuals with different personality types using the Enneagram typing along with the motivations behind the differences of the perceived anxiety levels will be investigated. The breakdown of the respondents according to their Enneagram personality types is depicted in Table 3.

Personality Type	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Reformer	30	9.7	9.7	9.7
Helper	69	22.3	22.3	31.9
Motivator	37	11.9	11.9	43.9
Individualist	27	8.7	8.7	52.6
Investigator	20	6.5	6.5	59.0
Loyalist	32	10.3	10.3	69.4
Enthusiast	38	12.3	12.3	81.6
Leader	20	6.5	6.5	88.1
Peacemaker	37	11.9	11.9	100.0
Total	310	100.0	100.0	

Table 3. Number of respondents according to their personality type.

The difference in the sample size for each Enneagram type, in particular Helper, Investigator and Leader may be attributed to the respondents' misidentification of their basic types. Average Helpers, like women, have well-

intentions toward others. They tend to desire being closer to others, forming friendships, giving support, being needed, overbearing and are not fond of others taking them for granted. Women, who are actually Peacemakers, also have a tendency to misidentify themselves as Helpers [30]. Peacemakers, when out of touch from their instinctual strengths, retreat into their inner self i.e. their minds and emotional desire, which mimics Helpers' identity.

Misidentification of the personality types can also be attributed to similarities of the traits in the nine types. For example, Investigators may confuse themselves as Reformers, as both types correspond to Jungian thinking types – Reformers to the extroverted and the Investigators to the introverted thinking type [29]. Investigators, especially females, also might confuse themselves as Individualists. Since Individualists are more feeling-oriented and Investigators are more intellectual, having deep feelings would make Investigators assume that they are Individualists [30]. Leaders can be confused with Motivators or Enthusiasts. These three types are all aggressive types – Motivators towards their goals and to others, Enthusiasts towards their environment, while Leaders are the mixture of both Motivators and Enthusiasts [29].

Although similar traits may be observed between the Enneagram types which lead to misidentification, however, the key point to these similarities is the differences in their motivations, i.e. why they may behave in a particular manner. However, apart from misidentification, another possible reason for the lowest number of respondents for types Investigator and Leader is that the administration of the questionnaire was random. As such, we could not know in advance the respondents' Enneagram type. It is possible that coincidentally, the individuals we approached as our respondents were not of types Investigator and Leader.

Since we are investigating whether the nine Enneagram types' means on the computer stressors differ significantly from one another, the One-way ANOVA test was selected to evaluate the effects. The test was evaluated for *General Stressor* and the three groups of stressors – *Network*, *Software* and *Hardware*. For each of the tests, it assesses whether means of the *General Stressor*, *Network*, *Software* and *Hardware* is significantly different among the nine personality types. The results for the tests are presented in Table 4.

All F-values obtained were lesser than the F critical of 1.9384. Hence, the p-values were rejected for *General Stressor*, *Network*, *Software* and *Hardware* respectively. In light of the non-significant analyses, the independent samples t-test was conducted for each of the four analyses as a complementary to the ANOVA. An independent samples t-test is used when comparing the means on a dependent variable for two independent groups. The One-way ANOVA's F-tests are equivalent to the t-tests, therefore leading to the same answer [3] and confirming the validity of running the t-test as a complementary test to the ANOVA. Since the possibility of obtaining a significant mean difference is higher for personality types with the highest and lowest mean, these two personality type groups were selected as the independent groups in each of the dependent group (*General Stressor*, *Network*, *Software* and *Hardware*).

	One-way ANOVA test		Mean		Independent Samples t-test	
	F-value	p-value	Group 1	Group 2	t-value	p-value
General Stressor	0.931	0.491	Reformer = 2.7778	Enthusiast = 3.1544	-2.606	0.011
Network	1.413	0.190	Reformer = 3.0444	Enthusiast = 3.5658	-2.889	0.005
Software	0.905	0.512	Motivator = 2.5180	Leader = 2.8917	-1.798	0.078
Hardware	0.451	0.889	Motivator = 2.6847	Enthusiast = 2.9737	-1.364	0.177

Table 4. Summary of the one-way ANOVA, mean and independent samples t-test.

The F statistics for Levene's test is used to test if the spread of the groups differs. Since the F-test for all four t-tests were not significant ($p > 0.05$), the two groups in each test were assumed to come from populations with equal variances. The two-tailed t-test yielded significant results for *General Stressor* and *Network*, indicating the significant effects between personality types and anxiety levels. Enthusiasts appear to have higher mean when compared to Reformers, in both analyses, indicating a higher level of anxiety.

Enthusiasts' anxiety level is higher than Reformers as they have problems with anxiety. They are anxious due to their inability to cope with the situation. Specifically, Enthusiasts' are anxious and fearful about their ability to cope with their inner environment – their grief, loss and anxiety [29]. As such, they seek for solace in the outer environment to avoid dealing with their anxieties. At the point of anxiousness, Enthusiasts search for activities and experiences that keep them occupied and momentarily repress their anxiety. By occupying themselves, they feel in control of their pain and anxiety. Dealing with anxieties draw them inward, making them more anxious, hence they get involve with more experiences.

However, the more activities they devote themselves to, the less they are in touch with whatever experiences they are having at that moment, thus increasing their anxiety. This is due to several reasons. Due to the lost of touch and enjoyment of the experiences, Enthusiasts tend to overdo their activities even more, becoming more anxious and dissipate themselves more. As anxiety increases, Enthusiasts minds will be occupied about the future [29], for example thinking about the next activity that they should do to repress their anxiety even though they have just began on a present activity, without giving themselves

a chance to fully experience the activity that might be able to quell their anxiety. These behaviors are evident when Enthusiasts disintegrates into Type One (Reformers) regardless of the level of anxiety Enthusiasts are feeling (for example moderate level in the *General Stressor* group or almost severe level in the *Network* group), Enthusiasts would always feel that they are missing out on something better and resenting themselves from truly enjoying the present experience. According to Riso and Hudson, until Enthusiasts allow themselves the chance to deal with their inner environment, they will always have problems with anxiety and develop a pattern of thinking and behaving as a defense against it.

Reformers, disintegrating into Type 4 (Individualists) when they are anxious, have lower anxiety level compared to Enthusiasts as they tend to repress their anxiety in pursuit for perfection. In particular, they want others to see them as rational and balanced people. Because Reformers always see themselves as less than ideal, "they constantly measure not only the distance between themselves and their ideal, but also the distance between their present perfection and their past imperfection" [29]. Hence, no matter how rational they were in the past while dealing with anxieties, Reformers would still compare themselves with their ideal, repressing their present anxiety more to improve on their past imperfection like controlling their actions and responses in front of others. However, even though they attempt to keep their repressed feelings in check as much as possible, they are not as successful as they want themselves to be, thus explaining why Reformers still do experience anxieties from time to time. Though they long to be free of anxieties, yet Reformers feel guilty for letting their guard down and become even stricter with themselves. The higher the level of anxiety Reformers tries to repressed, the more self- conscious they are with society, forcing them to get their acts together as cover-ups in others' eyes. As such, even though Reformers may be experiencing heighten anxiety, they would not let their feelings be transparent.

CONCLUSION

Based on our findings, it was evident that when different personality types were exposed to a same stressor, they perceive a stressor at different levels of anxiety. The research identified two personality types – Enthusiasts and Reformers, which were affected by a set of *General Stressor* and *Network* stressor. Enthusiasts were more likely to be anxious in stressful conditions than Reformers, due to their traits discussed and how these types disintegrate into their respective types in the Direction of Disintegration. Enthusiasts, regressing into Reformers, tend to feel they are missing out on something greater, thus further occupying themselves which increases their anxiety. Reformers, on the other hand, regressing into Individualists, would like to be perfect in everything, including being able to control their emotions and hence tend to repress their anxiety. Thus, with such results, it can be summed that an effect exists between the personality types and the anxiety levels of users.

Although a limited number of personality types exhibited significant effect, nonetheless, the results obtained implies a possibility that an individual's personality type influences his or her anxiety level. We believe that a more comprehensive set of stressors to measure the different stressor categories along with a standard and larger sample size for each of the nine personality types would enable a possibility of other personality types to have significant differences in their level of anxiety. Although our present research was limited in such aspects, nevertheless, the small but significant results are undeniable.

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