Original investigation

Time Estimation and Risk Taking Behavior in Type A Personality

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Abstract

Objective: Studies reported that Type A personality is characterized by ambition, aggression, and impatience. Although there are several studies investigating the relationship between individuals with this personality type and time perception and risk taking behavior, there are no studies investigating the relationship between the personality test scores, time perception, and risk-taking behavior. The main aim of this study is to reveal the relationship between Type A personality test scores, time perception and risk taking behavior.

Methods: 27 participants (17 males; mean: 21.41±1.69 years) were included the study. None of he participants had any neurological, psychiatric, chronic diseases. Timewall test for time perception and Balloon Analogue Risk Task (BART) for risk-taking behavior were administrated. SPSS 22 was used for data analysis. Pearson and Spearman correlation tests were used to determine the association between the personality test results, risk taking or time estimation scores.

Results: Participants' accuracy and the early/late response rates in Timewall were evaluated. There was a significant positive relationship between personality test scores and early response rates in Timewall test (=0.592, n=27, p=0.001) but a negative relationship between personality test scores and late response rates in Timewall test (=-0.591, n=27, p=0.001). No correlation were found between BART and personality test scores.

Conclusion: The results showed that the time perception shortened as personality test scores increased. Insufficient reward, punishment, and motivation in test could be the reason for not observing such relationship in BART.

Keywords: Type A personality, time perception, risk-taking behavior

INTRODUCTION

Type A Behavior (TAB) was first presented by Friedman and Rosenman in 1974. They described the most commonly observed overt characteristic of TAB as the sense of time urgency and/or impatience. Individuals with TAB usually feel that there will not be sufficient time to accomplish the things that he or she feels should be done (1). These individuals are also highly competitive, ambitious, work driven and aggressive (2). Due to their time urgency component of their personality; most of the studies employing individuals with TAB mostly focused on time estimation and time perception but these studies have contradicting results. In a study investigating the subcomponents of time urgency in Type A Behavior Pattern it was found that individuals who are generally hurried tend to estimate time sooner than those who are not hurried (3). Glass investigated the differences between Type A and Type B personalities and reported that Type A group had shorter mean values where Type B group had longer in time estimation task (4). Another studies tried to determine the

differences in time estimation and time management between Type A and Type B personalities. No significant differences were found between these two groups (5–7). On the other hand, Type A group overscored Type B group in multi task performances.

Risk taking behavior can be explained as engaging in behaviors which involve a high potential for punishment and opportunity for reward (8). Many studies tried to evaluate the relationship between risk taking behavior and personality. Studies that employ personality factor analysis revealed that risk taking behavior is related to impulsive sensation seeking, aggression and sociability (8–10).

To our knowledge no studies investigating TAB test scores and risk taking and/or time estimation behavior have been published yet. The main of this study is to investigate the relationship between Type A personality test scores and time perception and risk taking behavior.

METHODS

The research was performed in Dokuz Eylül University Faculty of Medicine Department of Biophysics Human Factor Laboratory. The study has been approved by the Clinical Ethical Committee of Dokuz Eylül University no 2017/18-44. All of the participants were informed about the research and their written informed consents were collected prior the study.

Participants

Before starting the protocols each participant filled some forms and questionnaires. SCL-90 R form were used to determine their mental health status, STAI-TX1 for anxiety levels, Epworth Sleepiness scale for their sleepiness status and personality type questionnaire for their personality type.

Twenty-seven healthy participants between the age of 19–26 (17 males; mean: 21.41±1.69 years) were included the study. Participants with high anxiety and/or sleepiness levels, neurological, psychiatric, chronic diseases were excluded from the study. Participants having type A personality behavior were included in the study.

Procedure

On the study day, participants were asked to fill out personality type questionnaire and complete cognitive tasks related with their risk taking and time perception behaviors. Both tests were administered via Psychology Experiment Building Language (PEBL) on computer (11). Detailed information about the tests are given below.

The personality type questionnaire was used in accordance with Friedman and Rosenman's personality factors such as being competitive, time urgent, hostile and/or aggressive, relaxed, patient and, easy going. Participants were asked to answer a yes or no questionnaire consisting of 50 questions. Participants with 26 or higher scores are considered as Type A Personality.

Balloon Analogue Risk Task (BART) measures actual risky behavior. On the screen a balloon is presented and with each pump it inflates. There are three different colored balloons with different explosion probabilities. Participants have no knowledge about their explosion probabilities. The algorithm of these probabilities was arranged by constructing an array of N numbers. According to this algorithm blue, orange and yellow balloons have 1–128, 1–8 and 1–32 integers respectively. Total 90 trails are presented. With each pump participants earn 5 cents in a temporary bank. All the money in the temporary bank is lost if the balloon explodes before collecting them. Participants can transfer the money from
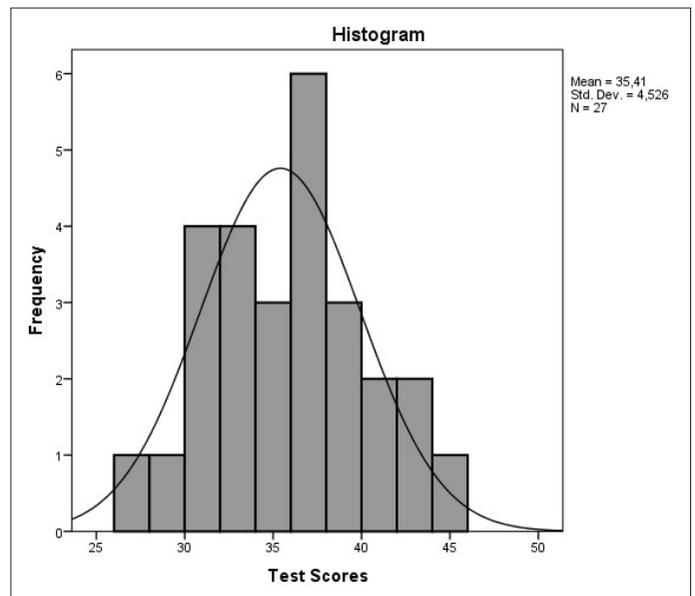

Figure 1. The distribution of personality test scores (N=27)

the temporary bank to the permanent bank during the trials by clicking "Collect $$$" button. The total money earned depends on the strategy participants developed (8).

Timewall is a time estimation task defined in United-Triservices Performance Assessment Battery. In this task a green square moves downwards with a constant speed. The square can be seen in 2/3 of the screen but it disappears behind a wall for the 1/3 of the screen. The participants were asked the judge when the green square would have reached the bottom of the screen (12).

Statistical Analysis

Statistical Package for Social Sciences (SPSS) software version 22 was used for data analysis. Shapiro-Wilk test was used to determine the normality of the data. Correlation tests were used in order to determine the association between the personality test results risk taking or time estimation score. Pearson correlation is used to measure the degree of relationship between the normally distributed data and Spearman correlation is used to measure the degree of relationship between non normally distributed data.

RESULTS

In this present study, test scores of 27 healthy participants on personality, risk taking behavior and time estimation were measured.

Table 1. Pumps, Explosions and Money earned in BART

	Pumps		Explosions		Money	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Blue	558.04	351.04	5.04	3.57	22.10	11.69
Yellow	130.56	49.90	13.19	5.81	3.30	0.98
Orange	86.85	14.81	18.41	3.95	1.60	0.61
Total	755.63	405.22	36.56	10.48	27.02	11.53

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Mean value of participants' personality test scores was 35.41 (±4.52) points. The distribution of scores is presented in Figure 1.

The means and standard deviations of Balloon Analogue Risk Task is presented in Table 1. Participants' mean values of pumps and money earned in blue balloons were greater than orange and yellow balloons.

Timewall scores were evaluated in two dimensions. First the accuracy rates of the participants were calculated. Mean value of accuracy in Timewall test was 0.07 (±4.52). Second, the early and late response rates were calculated. The mean values were 14.07 (±4.35) and 6.04 (±4.31) in early and late answers respectively.

A series of correlations were conducted in order to determine the relationship between personality type test scores and tasks (risk taking behavior and time estimation). A two-tailed test of significance indicated that there was a significant positive relationship between personality test scores and early response rates in Timewall test (=0.592, n=27, p=0.001) but a negative relationship between personality test scores and late response rates in Timewall test (=-0.591, n=27, p=0.001). However, a similar two tailed test of significance indicated that the personality test score was unrelated to pumps, explosions and money earned at any condition in BART.

DISCUSSION

In this study, the Type A Personality test scores and it's relationship between risk taking and time estimation behavior were investigated. Participants had more early response rates than late responses. This finding supports the idea that TAB individuals time urgency and/or impatience subcomponent effect their time estimation ability. Also the positive correlation between personality test scores and early response rates indicate that individuals tend to response earlier as their test scores increase. It has been reported that individuals who are generally hurried tend to estimate time sooner than those who are not hurried (3). The findings in our study is particularly important in time sensitive occupations requesting fast working pace.

TAB individuals are highly competitive, ambitious, work driven and aggressive (2). Studies that employ personality factor analysis revealed that risk taking behavior is related to impulsive sensation seeking, aggression and sociability (8–10). Lejuez reported that blue balloons provide a better measure of risk-taking behavior due to their wider range of variabilities (8). Although participants' mean values of pumps and money earned in blue balloons were greater than orange and yellow balloons, the personality test score was unrelated to pumps, explosions and money earned at any condition in BART. This result suggests that personality scores have no effect on risk taking behavior. This result can also be considered as a limitation in our study. Participants were not in a real high potential for punishment and opportunity for reward condition.

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