GEEKISM AND ACHIEVEMENT MOTIVES

Matthias Drees
S1095196

DEPARTEMENT OF BEHAVIOURAL SCIENCE
PSYCHOLOGY

EXAMINATION COMMITTEE

First Supervisor: Dr. Martin Schmettow
Second Supervisor: Dr. Matthijs Noordzij

16.01.2014

UNIVERSITY OF TWENTE.

Abstract

The study at hand explores the relationship between geekism and achievement goal theory. Geekism, among other traits, refers to the act of spending a lot of time in acquiring knowledge about technological products. Whereas, achievement goals refer to the intention an individual has before entering a competitive situation. The theory of achievement goals distinguishes between mastery goals and performance goals. In order to find out if geekism and achievement goals are related, 27 individuals were asked to participate in a study. Geekism was measurement with the help of a questionnaire and a picture story exercise. A need for cognition scale was also used to approximate geekism tendency. The achievement goal were modified versions of a 3x2 distinction of achievement goals, separating task, self and other oriented goals, and approach and avoidance conflicts. A regression analysis was conducted and no correlation between geekism and mastery achievement goals was found. However, a significant gender effect was found on geekism.

Samenvatting

De studie exploreerd de relatie tussen geekisme en achievement goal theory. Geekisme, bedoeld onder andere het investeren van een grote hoeveelheed tijd in het verwerven van kennis over technologische producten. Achievement goals verwijzen naar de intentie met welke iemand een competetief situatie aangaat. De theorie van Achievement goals onderscheid tussen mastery en prestatie doelstellingen. Om erachter te komen of Geekisme en Achievementgoals gerelateerd zijn, zijn 27 mensen gevraagd worden om deel te nemen aan het onderzoek. Geekism word gemeten met behulp van een vragenlijst en een picture story exercise. A Need for Cognition schaal is gebruikt worden om de geekisme tendens te benaderen. Het Achievement goal concept word gemeten via een gemodificeerde versie van een 3x2 questionaire. Deze onderscheidt taak, zelf en anderen gerichte doelen, en benaderings en vermijdens doelen. Een regressie analyse is uitgevoerd worden. Er is geen correlatie gevonden tussen geekisme een Achievement goals. Hoewel er een relatie tussen geslacht en het geekisme concept gevonden is.

Table of Contents

Introduction

Living without a computer or similar technological devices seems to be impossible these days. They are part of our way of living and almost everyone owns some kind of technological device. However, while most people own technological devices individuals differ greatly in their abilities and interest to be able to use and manipulate the systems of these devices. To

illustrate, some people equip themselves with the newest technology just to be up to date without having an in depth understanding of the product, while others want to understanding the product in every detail. No matter what motivation individuals have for owning a product, technological products need to fit in with the needs of users. A profound understanding of what the user expects from a product will not only make it more user-friendly but will also be essential for the success of a product once it has been introduced on the market. With this in mind, Schmettow, Noordzij & Mundt (2013) developed characteristics of hypothetical users that can help during the development of technological processes. To be more specific, their focus lies on individuals that have a high degree of technological enthusiasm, meaning individuals that spent a considerate amount of time in culminating knowledge in a technological field. The concept in which individuals fall when they have a high degree of technological enthusiasm and expertise has been coined 'Geekism' by Schmettow, Noordzij& Mundt (2013). Only in recent years the concept of geekism has gained scholarly interest, which is the reason why many topics surrounding it remain to be investigated. Or to put it in other words, many associations between different concepts, as for example material possessions love and geekism investigated by Schmettow and Geesen (2013) have only been studied recently and there are many more relationships to be explored. For this reason, the study at hand investigates the relationship between geekism and an individual's achievement goals. Is there a relationship between an individual's expertise and affiliation with technological products and the goals that individual pursue to achieve? To clarify, achievement goals describe the intention an individual has before entering a competitive situation (Elliot Murayama & Pekrun, 2011). As an illustration, two young men need to take a physical examination to become a police officer. One of them wants to fulfil the minimum requirements to get employed, whereas the other one wants to be the best applicant. Achievement goals are differentiated, as seen in the example above, between mastery and performance goals. Mastery goals, on the one hand describe individuals that are focused on their own performance e.g. whether they have understood the task or improved doing a task (Elliot, Pekrun & Murayama, 2011). On the other hand, individuals that follow performance goals compare their own performance with others e.g. have they performed better compared to their spouse or worse (Elliot, Pekrun & Murayama, 2011).

Hence, by studying the relationship between being a geek, or geekism in general, and achievement goals we try to find out how geeks are motivated when engaging with technological products or other areas in which they are experts. According to achievement goal theory there are various possibilities why geeks spend comparable more time on technological products than others. To begin with, geeks could be motivated to spend a lot of time with

certain product because they want to understand how the product functions. Or geeks could be spending a lot of time with a product, because they want to improve their own understanding of the product i.e. know the product even better than before. The next possible explanation is that geeks want to be better than others while using a certain product. The former two possibilities are on a personal level, the geek is concerned with its own knowledge, while the latter is concerned with the geek in relation to other individuals.

After having discussed the concept geekism and achievement goal theory shortly, the following part will elaborate the theory behind the geekism and achievement motives in more detail.

Geekism

Within the context of this study Geekism is defined as a need to explore and understand, to tinker with, and to collect technology and technologic gadgets, or in short a sort of technologic enthusiasm (Schmettow, Noordzij & Mundt, 2013). In more detail according to the themes found by Schmettow and Passlick (2013), a geek wants to be the best in a given technological field; he or she wants to be the expert to ask when it comes to certain technological products. Logically, to become an expert means to spend a lot of time acquiring all the necessary knowledge of a certain technological product. In addition to that, geeks decree over a lot of curiosity about the future of technological products and might wonder whether robots will be able to replace human beings one day or similar thoughts. Above being curious geeks experience pleasure developing their expertise about technological products, they enjoy spending a lot of time getting to know the product. It is important to realize that geeks not only want to understand all about the interface of the product, but also how the product is constructed. A trait of geeks is to disassemble products and use it for something else. For example, geeks would use the ventilation of a computer as wings for a little toy airplane.

The term geek however is routed in the medieval, where geek referred to carnival sideshow freaks (Sugarbaker, 1988). Carnival sideshow freaks were individuals with rare body deformations who showed those to earn money. Today the term has become “an endearing term of affection (and perhaps jealousy) and label for those who have expertise in a certain field.” (McArthur, 2008). While this overlaps with the conceptualization of the term in this study, a few negative associations with the term were used in the recent present that might still prevail. McArthur (2008) describes that the term was used in interchange with the term nerd to describe individuals with expertise in a certain field, but lack of social skills. Although these seem to have vanished, it is necessary to state that the geekism concept in the study at hand explicitly excludes these negative stereotypes and associations with the term. In fact in oppo-

sition to the anti-social stigmatization Schmettow & Passlick (2013) found altruistic tendencies in geeks.

The geekism concept was developed by Schmettow, Noordzij & Mundt (2013) to explain user preferences that go beyond the classic utility aspect and the newer experiential aspects such as the outer design. Instead of technology being a mean to an end, they propose that for some individuals the value lies within the product. The categories try to account for the multidimensional and dynamic user experiences. To distinct the three categories further I give a short explanation of each one in the following.

To start with, classic utility aspect refers to the need of users to reach a certain goal. For example, an owner of a computer might buy one for the sole purpose of writing documents on it, as long as the software and hardware work effective and efficiently the user is satisfied with the product. The product therefore represents a mean to reach a certain goal as easily as possible, called utilitarianism. Hassenzahl (2004) found that utilitarianism is connected to the usability of a product. Moreover, the ISO definition of usability in fact states that usability is the value of effectiveness, efficiency and satisfaction (ISO, 1998). However, a pure utilitarian concept does not explain for example, why individuals favour some functional similar devices or functional worse software over another. For some the need of experience is more important. The corresponding concept is called Hedonism. In other words Hedonism describes the pleasure a product can generate (Hassenzahl, 2004). The appearance of a product has been shown to have an impact on the perception of the quality of a device.

The geekism concept separates from these two concepts where the product is a vehicle for experience, or a certain goal. Instead the technology itself is sufficiently interesting.

Schmettow, Noordzij & Mundt (2013) found with the help of a Stroop task that Geekism indeed exists. Geeks were assumed to score high on the Need for Cognition Scale (NCS) (Cacioppo, Petty & Kao, 1984). Need for cognition measure pleasure gained from cognitive effort and is a well validated and reliable scale (Cacipoccio, 1984; Heesacker, 1985).

Flexible learning styles, a high motivation for challenging tasks and good attentional control are associated with a high score on the NCS. Furthermore, geeks were suspected to be more prevalent in technological study than in societal study. The study succeeded to find the hypothesized assumptions and even found greater preference for geekism than usability words, which questions the theory that a simpler device always enhances user experience.

Schmettow and Passlick (2013) executed a qualitative semi structured interview to identify motives of geekism. The study consisted of ten self proclaimed geeks, and the results have been analyzed according to the grounded theory approach. Although the results indicate that there are different categories of geeks, several motives were mentioned by these. For example as mentioned before geeks express that they frequently offer help to friends and family regarding problems related to their field of expertise, additionally they express interest in sharing their work via the internet. Especially the exchange with other geeks via social networks and other different options seems to be of importance to them. Quotes like this "Everybody has open access to the things I´m busy with right now" illustrate the readiness to share information and knowledge (Schmettow & Passlick, 2013). Knowledge and learning in relation to technology in general build an important aspect of geekness. Scoring categories reflecting this aspect are "Interest in progress of technology", "Interest in deeper understanding" and "joy through new knowledge" (Schmettow & Passlick, 2013). Also expressed interest in the functionality of products plays a major role in geekism overlapping with Schmettow, Noordzij and Mundt (2013) findings. Also consistent with the supposed tinkering interest of geeks, Schmettow & Passlick (2013) found the category motivated by reusing/ alienating products as well as optimization of products. Scientific standards were valued within the sample, as well as a social component as acknowledgement by others. Additionally Geeks express that they learn by themselves.

In order to measure geekism Schmettow and Sander (2013) and Schmettow and Keil (2013) developed instruments based on the two studies discussed before, especially based on the categories of the qualitative study by Schmettow and Passlick (2013). While the first developed a questionnaire (Schmettow & Sander, 2013), the latter developed an implicit Picture Story Exercise (PSE) (Schmettow & Keil, 2013). The questionnaire consists of 34 items. The PSE is developed based on the instructions by Pang (2011). The participants have to write down in three minutes what situation was shown on a picture they saw for ten seconds. As the respondents can freely associate what they thought about

At last, the question whether geeks have an intimate relationship, with technology was scrutinized (Schmettow & Geesen, 2013). In order to conceptualize material possession love the authors chose to use Sternbergs (1986) triangular theory of love. The triangular theory of love supposes eight different types of love, which develop out of three subcategories, intimacy, passion and commitment. Intimacy refers to liking and feeling of closeness, passion to attraction and sexual desire and commitment to the decision to make a long term commitment. The Material Possession Love scale developed by Lastovicka and Sirianna (2011) based on this

theory was used by Schmettow & Geesen study (2013). The study concludes that geekism is related to a high level of intimacy and therefore closeness, while hedonism is related to passion. In the following part I will lay out a short history of the Achievement Goal History and the theoretical background of the conceptualization of the study at hand.

Achievement Goal Theory

The core concept of achievement goal theory was developed around 1980 by several researchers simultaneously. Ames (1984), Dweck (1986), Maehr and Nicholls (1980) developed independently and in collaboration with each other concepts that separate two achievement goals. In which achievement goals broadly refer to the purpose of engaging in achievement behaviour (Maehr, 1989). Although different labels and a few other differences exist between these concepts the overlap between the concepts is big enough to summarize them. The two dimensions are often labelled as mastery and performance goals. Mastery goals refer to an individual's goal of developing competence, while performance goals are aimed to demonstrate competence even if it means that it is superficial competence (Elliot, Murayama & Pekrun, 2011). To illustrate this with an example, imagine a student learning for an exam or a similar test situation, if the student chooses to focus on developing competence on the subject instead of getting a good grade- or in other words a good performance- on the test, he pursues a mastery goal instead of a performance goal. A performance goal uses an inter individual standard of comparison, while the mastery goal is associated with an intra individual comparison (Elliot, Murayama & Pekrun, 2011). Supposing the student would hold a performance oriented goal he would strive to outperform other students. Before explaining the concept and its implications in more detail we proceed to map the development of achievement goals.

In the nineties, Elliot & Harackiewitz (1996) introduced a second dimension to the mastery and performance achievement goals concept. The second dimension differentiates between approach and avoidance goals to account for differences in avoiding failure, and approaching success. More specifically, approach goals describe the striving to achieve positive events, while avoidance goals describe the striving to prevent negative events (Van Yperen, 2006; Elliot Murayama & Pekrun, 2011; Senko, Hulleman, Harakiewitz, 2011). The earlier formulated examples to illustrate mastery and performance goals represent approach goals. Whereas, avoidance goals can be described as follows. For example, the student in the test situation might hold performance avoidance goals, expressed in her less ambitious motive not to be the worst student in her class. She is avoiding failing related to others. With a mastery avoidance goal in mind she would aim not to score worse than the last time on a similar test. The initial introduction of the approach-avoidance dimension was only applied to the per-

formance goals. In 1999 however the dimension was also added to the mastery goal (Elliot, 1999).

The achievement goal concept was developed to explain students' behaviour in achievement situations (Dweck, 1986, Nicholls 1984). In the first theories, mastery achievement goals were theorized to be always more beneficial to individuals than performance goals (Dweck, 1986; Nicholls, 1984). Some researchers succeeded to show that oppositional to what is believed there is a positive relationship between performance approach goals and the actual performance (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000). Hulleman, Schrager, Bodmann, & Harackiewicz (2010) list some of the benefits of achievement goals.

Negative patterns of learning for students with performance avoidance goals have been observed. For example help seeking is reduced, anxiety rises, and cheating is accepted and also exhibited more often (Karabenick, 2004, Elliot, McGregor, & Gable, 1999; Anderman, Griesinger & Westerfield, 1998). Also students engage in self handicapping behaviour, instead of learning hard in order to achieve good results they engage in behaviour to explain the failure, which is then almost guaranteed (Midgley, Arunkumar, & Urdan, 1996). Also maladaptive responses in conflict situations have been observed.

Mastery goals in general are related to positive peer relationship, openness to work with classmates, sharing of opinions and tolerance of opposing opinion (Lau, Liem & Nie, 2008). Performance goals are not necessarily the complete opposite, instead there seems to take a more careful evaluation of opinions, while bad ideas are discarded good ones are embraced. Also performance oriented individuals tend to share information less readily to keep a competitive advantage (Poortvliet, 2009)

Cheating and acceptance of cheating are clearly associated with performance goals and opposed to mastery goals (Anderman, Griesinger & Westerfield, 1998).

Additional to these social aspects, mastery goals are associated with positive learning behaviour, for example adaptive motivational processes (Grant & Dweck, 2003). In general the association has been made with deep learning strategies, referring to learning strategies that are focused on understanding and elaborating content instead of focusing on surface features and memorising facts (Vrugt & Oort, 2008; Lau, Liem & Nie, 2008, Grant & Dweck, 2003). Mastery goals are also linked to persistence and effort. Intrinsic Motivation and interest are also associated with mastery goals (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000).

Elliot, Murayama and Pekrun (2011) argue that achievement goals should accurately use the point of reference as distinction between the different goals. In order to do so they refer to performance goals as other-oriented goals. Instead of being directed to performance the inter-individual standard moves to the centre of the concept. For mastery goals they propose a more interesting distinction, namely task-oriented and self-oriented goals. The different goals are outlined in the table 3x2 Achievement goals. In the table also examples are provided.

Table 1 3X2 Achievement goals

	Task Absolute(Mastery)	Self Intra individ-ual(Mastery)	Other Inter individual (Per-formance)
Approach(Success) Goals	Task Approach Goals E.g. To score all points on a certain test – to fully under-stand a subject	Self Approach Goals E.g. To improve one-self, by scoring higher than in similar situations	Other Approach Goals E.g. To outperform others
Avoidance (fail-ure)Goals	Task Avoidance Goals E.g. To avoid not scoring a certain amount of points, to avoid not understand-ing a subject	Self Avoidance Goals E.g. Avoiding to score less than in a similar achievement situation	Other Avoidance Goals E.g. To avoid being outperformed by oth-ers

Table 1 summarizes the conceptualization and provides examples for the six different con-cepts.

Although the concept has existed for almost thirty years, or especially because it has existed for this relatively long period, controversy remains in the field. A common point of discussion for example builds the conceptualization of achievement goals. Hulleman, Schrager, Bod-mann & Harackiewicz (2010) use the following definition of achievement goals ”[...] a fu-ture-focused cognitive representation that guides behaviour to a competence-related end state that the individual is committed to either approach or avoid.”. According to the authors this definition is closely matched to the goals as purpose definition, and represents a situational definition of goals (Elliot & Thrash, 2002).

However, the conceptualization as purpose with which achievement situation are entered highlights the situational aspect of achievement goals, which leads to practical implications such as changing the environment to influence beneficial learning behaviour (Elliot, Murayama & Pekrun, 2011; Hullemann, et al., 2010). On the other hand, evidence suggests stable patterns of achievement goals in individuals. Van Yperen (2006) found that 80% of people have a dominant achievement style across different situations.

The following part will outline the hypotheses derived from the literature above.

Hypotheses

Mastery achievement goals and the themes geeks expressed in Schmettow & Passlick (2013) show a great deal of overlap. Namely, mastery goals are associated with intrinsic motivation and interest, geeks show such in technology areas. Instead of focusing on surface features, geeks strive to understand the technologic product. Also seem geeks to share their knowledge with everyone, opposing findings of performance orientation.

Therefore hypothesis number one reads as follows.

1. Geeks hold mastery achievement goals in the field of technology.

The distinction of mastery goals in task- and self- oriented achievement goals is difficult to estimate. While it seems to be the case that geeks are more task oriented, as they seem to be focused on understanding the task instead of improving themselves. The relationship between geekism and task and self achievement goals remain explorative.

Additionally, we test whether the achievement goals are the same between different subjects, in the case of this study sport and technology. Van Yperen (2006) suggests that individuals have a dominant achievement style. We therefore formulate hypothesis two accordingly.

2. Individuals with a high score on one technology achievement motive, have a high score on the same sport achievement.

The following part will deal with how the researcher has collected the data to test the hypotheses with.

Methodology

The next part will deal with the methodology section of this paper. It will elaborate the sample, the measures, materials used to survey the sample and how the data is analysed.

Sample

In total 27 individuals participated in this research. 24 of these were gathered via convenience sampling, three participated via the Sona – system of the University of Twente. Sona-system is a platform were students of certain studies as Psychology and Communication studies subscribe to fulfil a certain amount of study participation hours obligatory for their study program. English, German and Dutch were available languages. For further description of the sampling see the results section.

Measures

In the following the variables measured in the study at hand will be laid out that. The detailed description of the execution and contents of the measurements will follow in the subsequent sections. Geekism was measured via the Geekism scale by Schmettow & Sander (2013) and the PSE (Schmettow & Keil, 2013). The questions, as well as the scoring of the story, are based on the themes Schmettow & Passlick (2013) found in their interviews.

Achievement goals were measured based on Elliot, Murayama & Pekruns (2013) description of these. The table 3x2 achievement goals describes these. For each of the six aspects three questions were formulated. For example, "To perform better with this product than I have done with these type of products in the past". Participants had to indicate to what degree they disagree or agree with the statement.

Design/Procedure

The study is designed as a questionnaire study. Therefore, no experimental manipulation took place. Participants were invited to a quiet area or room and were asked to fill out the materials. At first an informed consent paper was signed by the participants, informing the participants of their rights, including information of the general purpose of this study. Only a small amount of detail was given though, to prevent biases. In detail, the information was that the study will be about technology and motivation. All materials were filled out in one session, which was estimated to take 40 minutes. Some participants however took roundabout 45 minutes.

The tests were delivered to the participants in the following order: Need For Cognition scale, PSE, Technology Achievement Goal questionnaire, Geekism Scale and Sport Achievement Goal questionnaire.

Materials

In this thesis a multi-method approach was chosen to measure Geekism. In detail, a questionnaire by Schmettow and Sander (2013) and an implicit Picture Story Exercise (PSE) by Schmettow and Keil (2013), as well as the Need for Cognition scale (Cacioppo, Petty & Kao, 1984). To measure the achievement goals two questionnaires based on Elliot, Pekrun & Murayama (2011) were given with the topics of technology and sports.

The Geekism questionnaire consists of 34 items that are based on the topics Schmettow & Passlick (2013) described in their qualitative study about geeks. The PSE or GIMPL consists of 15 different pictures and is developed by Schmettow & Keil (2013) on the basis of Pang (2010). Participants get eight of the 15 pictures, based on one of eight versions. Participants are shown each picture for ten seconds and have three minutes per picture to write down what was shown on the picture. This is an implicit measure of Geekism as the stories are guided by the internal ideas of the participant. The pictures get scored according to a scoring manual and the final score represents the number of expressed motives per thousand words. The score is based on a categorisation by the researcher. In order to do so, a scoring formula was used which basis is described in the measurement section (Schmettow & Keil, 2013).

The Need for Cognition scale is developed by Cacioppo, Petty and Kao (1984), consisting out of 18 different items. The items revolve around ones preference for complex or simple thinking, the need for cognition. The NFC is an important factor of the Geekism concept and is used as an initial substitution for the geekism scale by Schmettow, Noordzij and Mundt (2013).

The Achievement Goal questionnaires are build upon the Elliot, Pekrun and Murayama (2011) 3x2 questionnaire, with also 18 items. To measure the technology participants were asked to imagine an achievement situation in which they had to learn a particular piece of software or technology and state for each of the following 18 goal how true each of them is for themselves. The goals consisted of the six combinations of task, self and other, and approach and avoidance dimensions. To control for stability of the achievement goal a comparative test was developed with the same construct regarding sports. The participants in this case were asked to imagine sport situations and their respective achievement goals.

All questionnaires were scored on a seven point Likert scale, with possible scores from 1 to 7 and the corresponding “Not true of me” and “Extremely true of me”.

Data analysis

In order to analyze the data all scores where standardized and for each questionnaire a mean value was build for each participant by summing up the value of each item, divided by the total amount of items. The Geekism scale and NFC scale items that needed to be recoded were recoded according to the instruction. The achievement motive scales are added up according to each answer. In order to obtain the task approach goal the mean score of items one to three is calculated, task avoidance four to six, self approach seven to nine, self avoidance ten to twelve, other approach 13 to 15 and other avoidance 16 to 18.

The following part will describe the results of the above described methodology.

Results

In total 27 individuals participated in this study. Age ranges from 19 to 62, with a mean age of 29 and a standard deviation of 12.98.

Statistics

Age (Descriptive)		
N	Valid	27
	Missing	0
Mean		29,74
Median		23,00
Std. Deviation		12,975
Range		43
Minimum		19
Maximum		62

Table 2 Descriptive table of age

Only six people are aged 40 and above, therefore the median is 23. No participants fall in the category between 30 and 40. The gender is almost equally distributed with slightly more males (55.6%).

Gender(Descriptive)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	15	55,6	55,6	55,6
	Female	12	44,4	44,4	100,0
	Total	27	100,0	100,0	

Table 3 Descriptive table of gender

Since only one participant is occupied in a technical field, geekism is expected to be low in this study. One participant left open question number 31 in the geekism scale.

Three male participants, age 40 and above are not scored on the picture story exercise, because they did not identify the robots on the pictures and therefore might influence the results of the test. Another participant is excluded for being uncooperative in the exercise, because the pictures were only described in one sentence. Regarding the geekism achievement motive questionnaire, only question number seven is left blank once. The achievement motive regarding sport is left blank for one participant. Additionally, the first question is left blank once. The need for cognition scale is filled out by every participant.

Cronbachs alpha of the geekism items without the deletion of any item is 0.939. Although the deletion of some items could result in a Cronbach alpha of 0.943(Gk9) or similar values this value is satisfying, no items are deleted.

The geekism achievement motive scale reaches a Cronbachs alpha of 0.871. The deletion of item3 could heighten the alpha value to 0.88. A factor analysis is executed in order to check the construct. As it is described in the introduction different constructs exist of the achievement motive. In this questionnaire there are supposed to be six different factors. These can

either be summarized to the three different tasks- , self- and other- oriented concept or the dual mastery and performance concept.

A factor analysis with a fixed number of factors of three is conducted. It shows a clear factor for the performance goal orientation items, as well as a less clear second factor for self oriented goal orientation. The results for the task oriented goal orientation however are less clear at best. The model with three factors explains 69.51% of the observed variance.

To analyze the results of this study at first it was looked at the relationship between the three tests designed to measure geekism. In order to do so, first correlation is measured. The results are summarized in table Table 4 Correlations.

Table 4 Correlations

		Self oriented Goals	Other oriented Goals	Task Oriented Goals	Geekism Scale (zscore)	NFC (zscore)	PSE Geekism (zscore)
Self oriented Goals	Pearson Correlation	1	,392*	,429*	,238	,589**	,044
	Sig. (2-tailed)		,048	,029	,253	,002	,847
	N	26	26	26	25	26	22
Other oriented Goals	Pearson Correlation	,392*	1	,217	,428*	,340	,345
	Sig. (2-tailed)	,048		,276	,029	,083	,116
	N	26	27	27	26	27	22
Task Oriented Goals	Pearson Correlation	,429*	,217	1	,242	,330	,575**
	Sig. (2-tailed)	,029	,276		,233	,093	,005
	N	26	27	27	26	27	22
Geekism Scale (zscore)	Pearson Correlation	,238	,428*	,242	1	,402*	,324
	Sig. (2-tailed)	,253	,029	,233		,042	,152
	N	25	26	26	26	26	21
NFC (zscore)	Pearson Correlation	,589**	,340	,330	,402*	1	,099
	Sig. (2-tailed)	,002	,083	,093	,042		,663
	N	26	27	27	26	27	22
PSE Geekism (zscore)	Pearson Correlation	,044	,345	,575**	,324	,099	1
	Sig. (2-tailed)	,847	,116	,005	,152	,663	
	N	22	22	22	21	22	22

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Additionally, the two scatter plots show the linear regression lines, with their explained squared variance. The geekism scale and the PSE geekism have an R^2 of 0.105, which means that 10.5% of the variance can be explained through one of the scales.

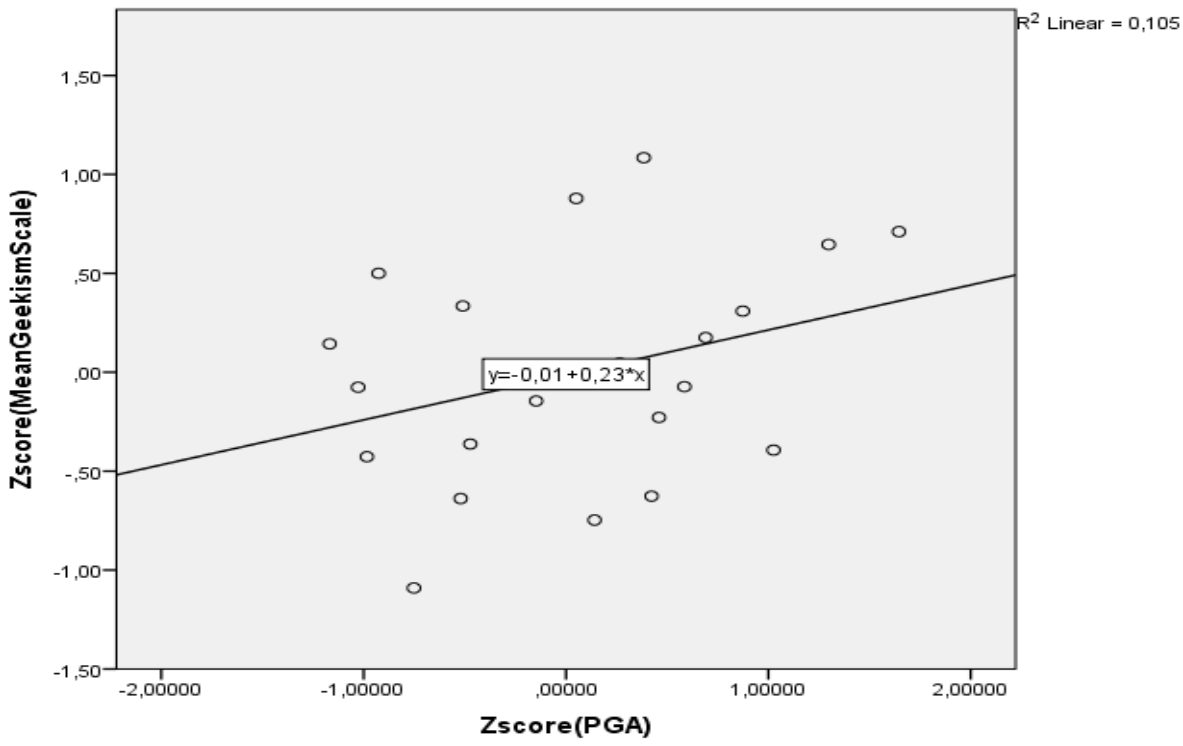

Figure 1 Scatter plot Geekism and PSE

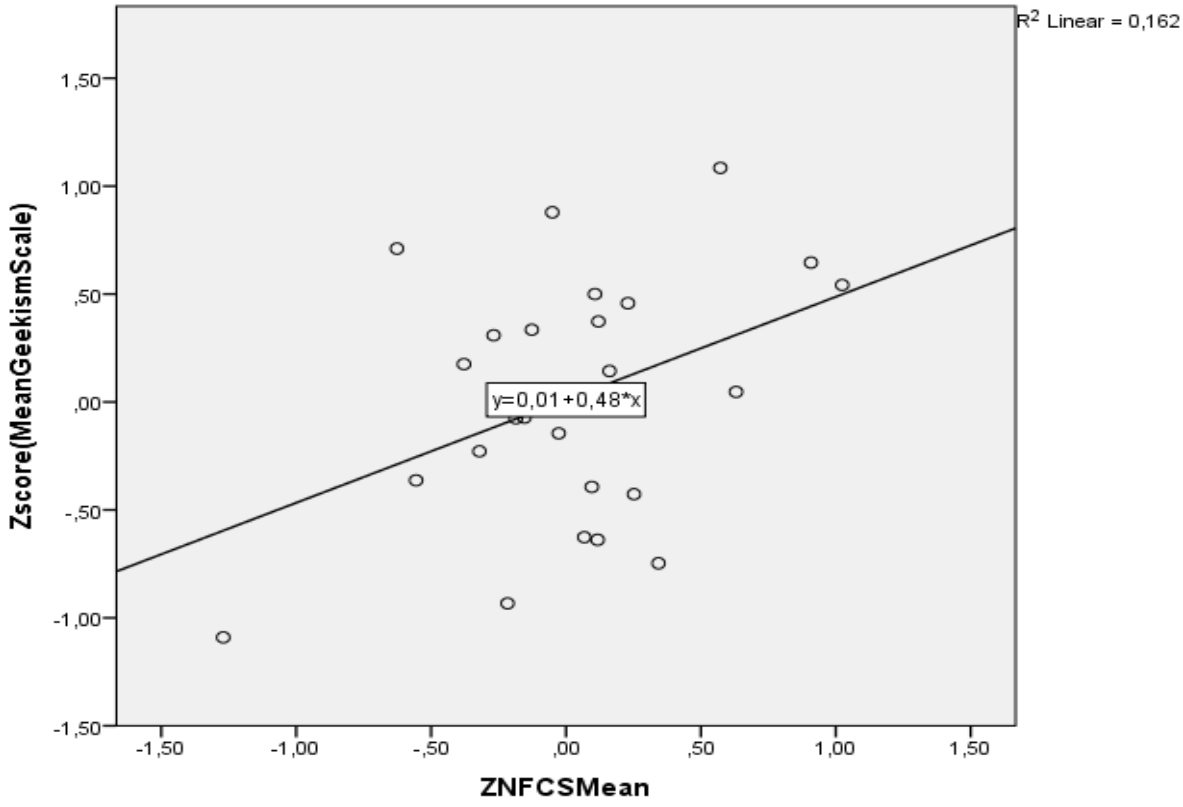

Figure 2 Scatter plot Geekism and NFC

A regression analyses was used to predict whether the PSE geekism score, the NFC score, and gender predict scores of the geekism scale. The results show no significant relationship between PSE geekism and geekism scale, and NFC score and geekism scale, but show a significant gender effect in this study.

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	Df	Sig.
(Intercept)	-,333	,1214	-,571	-,095	7,528	1	,006
[Gender=1]	,698	,1829	,339	1,056	14,547	1	,000
[Gender=2]	0[a]	.	.	.	.	.	.
ZPGA	,100	,1097	-,115	,315	,832	1	,362
ZNFCSMean	,135	,1918	-,241	,511	,493	1	,482
(Scale)	,147[b]	,0454	,080	,269			

Dependent Variable: Zscore(MeanGeekismScale)

Model: (Intercept), Gender, ZPGA, ZNFCSMean

a. Set to zero because this parameter is redundant.

b. Maximum likelihood estimate.

Table 5 Parameter Estimates

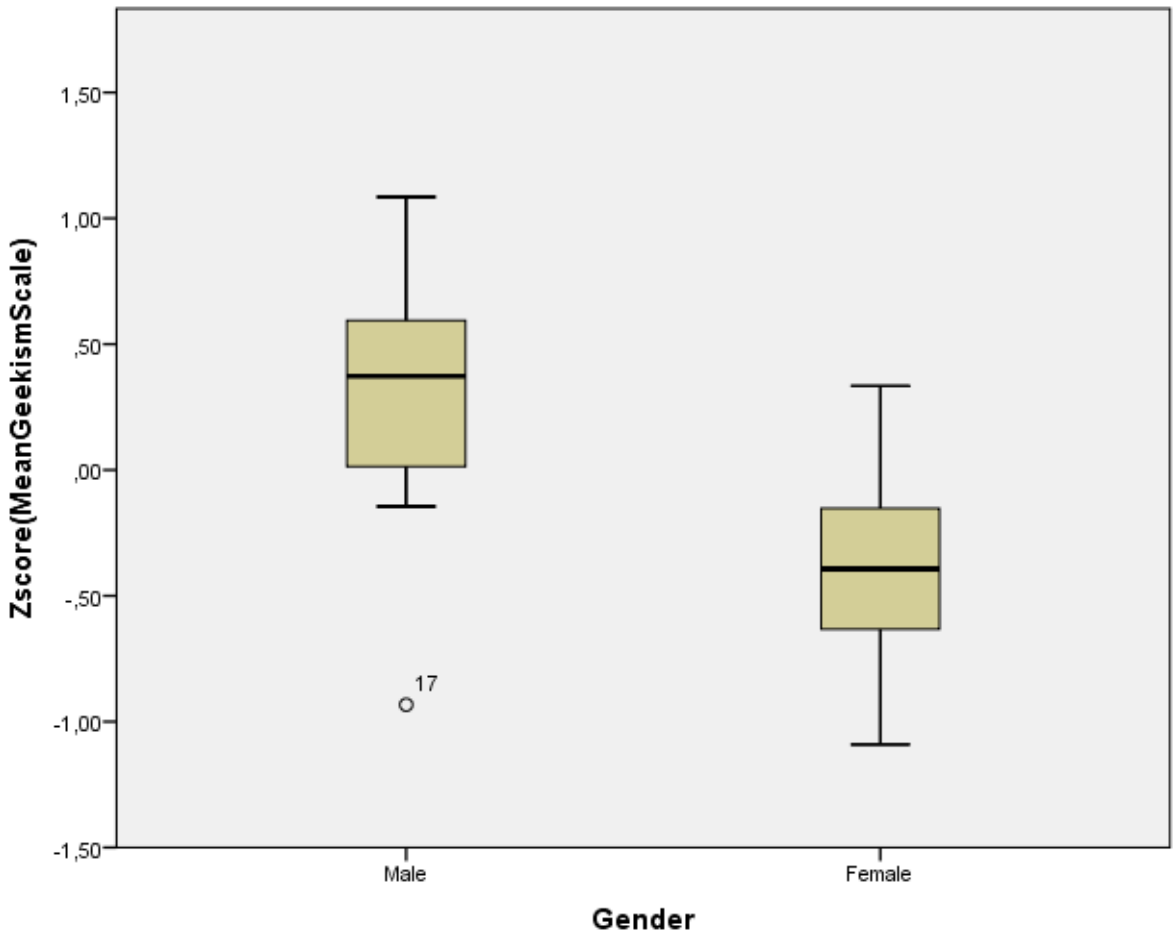

Figure 3 Box plot Geekism Gender

Second, a regression analysis was conducted to measure how far achievement motives can be predicted based on the geekism scale, the PSE geekism score and the NFC score in order to test the hypotheses. The main emphasis lies on the geekism scale. This results in a significant relationship between the geekism scale and performance goal orientation. While no significant relations are found between the geekism scale and the PSE geekism, a significant relationship is measured between self oriented mastery goals and a need for cognition. The task oriented achievement goal shows to be significant with the PSE scale and slightly above the significance level and no significance for the geekism scale, but a significant interaction effect for the geekism scale and gender.

To test whether achievement goals are stable across different situations we measured the correlation between each of the six factors. For example, the correlation between the mastery approach goal sport and the correlation between the geekism mastery approach goal. With the exception of other - avoidance goals all couples were correlated beyond or equal to a Pearson correlation of r = .3. This is usually considered a low correlation. The other avoidance couple is correlated with r=.509 which is acceptable, and also has a significant value.

Discussion

Our hypothesis that geeks hold more mastery achievement goals in technology situations could not be verified in this study. However, the study is solely based on an explicit measurement of achievement motives that the individuals subjectively express. In order to receive a more reliable result a different approach is necessary. Elliot, Murayama & Pekrun (2011), for example, suggest that the best manner to measure achievement goals is to ask respondents explicitly which type of goals they pursue in a certain situation. This was done in the study at hand too. However, this approach does not account for the possibilities that people are unaware of their true goals. Additionally, this approach is very susceptible to a social bias, especially if different cultural backgrounds are measured. A participant might want to be perceived as an altruistic person that rather helps than is seen as competitive. Especially in this study a social bias might have played a role, as the majority was sampled via convenience sampling and therefore in the direct environment of the researcher. A follow up study should address these questions and try to counter them by different strategies.

First of all a behavioural measure could be applied. With the help of measuring the actual behaviour one can test whether the actual behaviour overlaps with the theorized behaviour according to the geekism tendency and the achievement behaviour. In order to do so, one might first measure the general level of geekism and the achievement motive in a first session. To prevent influence of the questionnaires a second session measures the behaviour. Such a session could be designed as follows. The participants are set in a separate room and are asked to perform a task with a certain technological device. The device is designed to allow users different approaches to reach the task goal. To control for the framing effect different settings are used. Instead of performing a certain task, participants are asked to understand how the machine works. Or are asked to evaluate the outer appearance of the product and whether others would think the device is attractive. After the test the scales are taken again. One might even design a third session, where some of the individuals switch the task they have to do and others keep the same, to control for intra individual changes. Next to the measurement of the questionnaires and materials, the researcher can categorize the behaviour the participants' exhibit. The categorization need to be specified in advance and get extracted from the literature. The main research question in this design is whether the participants behave as the theory predicts. Do Geeks show geekish behaviour and show a tendency to try to understand the inner functioning of a device although the aim is only to full fill a certain task. Individuals with a performance goal should behave according to their performance goals. The different situations are used in order to eliminate possible framing effects. For example, the approach to let the participants execute a certain task can be seen as utilitarian and therefore

should elicit utilitarian responses. The observing researcher should not know whether somebody scored geekish or not. Ideally also multiple observers are used in order to measure inter-rater-reliability. As such a device a certain robot prototype could be used. The robot can be controlled via some sensory information. Instead of measuring the explicit goals researchers should also think to use a different questionnaire.

Another variable of manipulation regarding achievement motive can be competition. The participants can either be set alone or with a competitor into a room. With the help of this one can measure whether mastery and performance goals are changing. Of course all this potential formats underlie the restrictions of time and resources, therefore a too elaborated experiment might not be efficient.

As mentioned above, individuals filled out two questionnaires to control whether they have dominant achievement goals- one regarding sports, the other regarding the use of technological products. Since hypothesis 2 stated "Individuals with a high score on one technology achievement motive have a high score on the same sport achievement", we expect a high correlation between the different factors. However, no correlation was found between different factors, except for avoidance goals. In addition, individuals scored different on the two achievement goal scales on each of the factors.

Despite the usual limitation of questionnaires and sampling biases, as the small sample size in relation to the population, a few others limitations have to be considered. First the achievement goal questionnaires were designed to measure explicit goals. Meaning participants had stated how true each statement holds to them, therefore participants needed to be conscious about their goals. In this case different biases might have influenced the results. Social biases might be relevant, as well as perceptions of the ego. As there was no behavioural control the actual behaviour can differ significantly from the described goals. According to Elliot and colleagues (2011), this approach is the better way to approach achievement goals, regarding their perception of goals as conscious aims. However, different researches have used different approaches, often favouring behavioural questions. These might provide other results.

The second major limitation might lie within the achievement concept and the execution of this study. According to the used definition of achievement, different degrees of competition need to present in order to make something an achievement situation. Although it was tried to direct the questionnaire to competitive situations that include some sort of evaluation (e.g. study, work), people might have skipped that or results might be different under a real

achievement situations. Also it is debatable how far geekism is related to achievement situations, the results therefore might be true for geeks only in certain competitive situations.

References

Ames, C., & Ames, R. (1984). Goal structures and motivation. The Elementary School Journal, 85(1), 39-52.

Anderman, E. M., Griesinger, T., & Westerfield, G. (1998). Motivation and cheating during early adolescence. *Journal of Educational Psychology, 90(1),* 84.

Cacioppo, J. T., Petty, R. E., & Kao, C. F. (1984). The efficient assessment of need for cog nition. *Journal of personality assessment*, *48*(3), 306–7. ^ doi:10.1207/s15327752jpa4803_13

Dweck, C. S. (1986). Motivational processes affecting learning. American psychologist, 41(10), 1040.

Elliot, A. J., McGregor, H. A., & Gable, S. (1999). Achievement goals, study strategies, and exam performance: A mediational analysis. *Journal of educational psychology*, *91*(3), 549.

Elliot, A. J., Murayama, K., & Pekrun, R. (2011). A 3 × 2 achievement goal model. *Journal of Educational Psychology*, *103*(3), 632–648. doi:10.1037/a0023952

Elliot, A. J., & Thrash, T. M. (2002). Approach-avoidance motivation in personality: Ap proach and avoidance temperaments and goals. *Journal of Personality and Social Psychology*, *82*(5), 804–818. doi:10.1037//0022-3514.82.5.804

Grant, H., & Dweck, C. S. (2003). Clarifying achievement goals and their impact. *Journal of personality and social psychology, 85(3),* 541.

Harackiewicz, J. M., Barron, K. E., Tauer, J. M., Carter, S. M., & Elliot, A. J. (2000). Short-term and long-term consequences of achievement goals: Predicting interest and per formance over time. Journal of educational psychology, 92(2), 316.

Hassenzahl, M. (2004). The interplay of beauty, goodness, and usability in interactive prod ucts. *Human-Computer Interaction, 19*(4), 319-349.

Heesacker, M. (1985). Need for Cognition Scale. In D.J. Keyster & R.C. Sweetland (Eds.), Test critiques. Vol.3. Kansas City, MO: Test Corporation of America. Pp. 466-474.

Hulleman, C. S., Schrager, S. M., Bodmann, S. M., & Harackiewicz, J. M. (2010). A meta-analytic review of achievement goal measures: different labels for the same constructs or different constructs with similar labels? *Psychological bulletin*, *136*(3), 422–49. doi:10.1037/a0018947

International Organisation for Standardization. ISO 9241- 11: 1998 Ergonomic Requirements for office work with visual display terminals (VDTs)—Part 11: Guidance on usability

Kaplan, A., & Maehr, M. L. (2006). The Contributions and Prospects of Goal Orientation Theory. *Educational Psychology Review*, *19*(2), 141–184. doi:10.1007/s10648-006-9012-5

Karabenick, S. A. (2004). Perceived Achievement Goal Structure and College Student Help Seeking. *Journal of educational psychology*, *96*(3), 569.

Lastovicka, J.L., Sirianni, N.J. (2011). Truly, Madly, Deeply: Consumers in the Throes of Material Possession Love. Journal of Consumer Research, 38, 323-342. Doi: 10.1086/658338

Lau, S., Liem, A. D., & Nie, Y. (2008). Task-and self-related pathways to deep learning: The mediating role of achievement goals, classroom attentiveness, and group participa tion. British Journal of Educational Psychology, 78(4), 639-662.

Maehr, M. L. "Motivation and creativity: The relationship between achievement goals and creativity in writing." (1989).

Maehr, M. L. & Nicholls, J.G. (1980). Culture and achievement motivation: A second look. In N. Warren (Ed.). Studies in cross-cultural psychology, 3, 221-267. New York: Aca demic Press.

McArthur, J. a. (2008). Digital Subculture: A Geek Meaning of Style. *Journal of Communication Inquiry*, *33*(1), 58–70. doi:10.1177/0196859908325676

Midgley, C., Arunkumar, R., & Urdan, T. C. (1996). " If I don't do well tomorrow, there's a reason": Predictors of adolescents' use of academic self-handicapping strategies. *Journal of Educational Psychology*, *88*(3), 423.

Pang, J. S. (2010). O.C. Schultheiss & J.C. Brunstein (Eds.), Implicit Motives. New York, NY: Oxford University Press., 1–47.

Poortvliet, P. M. (2009). The Joint Impact of Achievement Goals and Performance Feedback on Information Giving, 197–209. doi:10.1080/01973530903058276

Poortvliet, P. M., Janssen, O., Van Yperen, N. W., & Van de Vliert, E. (2007). Achievement ^ goals and interpersonal behavior: how mastery and performance goals shape infor

mation exchange. *Personality & social psychology bulletin*, *33*(10), 1435–47. doi:10.1177/0146167207305536

Schmettow, M., & Keil, J. (2013). *Development of an Implicit Picture Story Exercise Measur ing Personal Motives for the Interaction with Technical Products*. University of Twente.

Schmettow, M., Noordzij, M. L., & Mundt, M. (2013). An Implicit Test of UX : Individuals Differ in What They Associate with Computers, 2039–2048.

Schmettow, M., & Passlick, F. (2013). *Being Geek - An attempt at bulding a theory of geekism*. University of Twente.

Schmettow, M., & Sander, N. (2013). *The Construction and Evaluation of a Questionnaire Measuring Geekism*. University of Twente.

Senko, C., Hulleman, C. S., & Harackiewicz, J. M. (2011). Achievement Goal Theory at the Crossroads: Old Controversies, Current Challenges, and New Directions. *Educational Psychologist*, *46*(1), 26–47. doi:10.1080/00461520.2011.538646

Sternberg, R.J. (1986). A triangular theory of love. Psychological Review, 93, 119-135.

Van Yperen, N. W. (2006). A novel approach to assessing achievement goals in the context of the 2 x 2 framework: identifying distinct profiles of individuals with different dominant achievement goals. *Personality & social psychology bulletin*, *32*(11), 1432–45. doi:10.1177/0146167206292093

Vrugt, A., & Oort, F. J. (2008). Metacognition, achievement goals, study strategies and aca demic achievement: pathways to achievement. *Metacognition and Learning, 3(2)*, 123-146

Appendix

Correlations

		MAPSPORT	TAPZGKmean
MAPSPORT	Pearson Correlation	1	,259
	Sig. (2-tailed)		,210
	N	25	25
TAPZGKmean	Pearson Correlation	,259	1
	Sig. (2-tailed)	,210	
	N	25	27

Correlations

		TAVZGKmean	MAVSPORT
TAVZGKmean	Pearson Correlation	1	,032
	Sig. (2-tailed)		,877
	N	27	26
MAVSPORT	Pearson Correlation	,032	1
	Sig. (2-tailed)	,877	
	N	26	26

Correlations

		SAPSPORT	SAPZGKmean
SAPSPORT	Pearson Correlation	1	-,015
	Sig. (2-tailed)		,942
	N	26	25
SAPZGKmean	Pearson Correlation	-,015	1
	Sig. (2-tailed)	,942	
	N	25	26

Correlations

		SAVSPORT	SAVZGKmean
SAVSPORT	Pearson Correlation	1	,248
	Sig. (2-tailed)		,221
	N	26	26
SAVZGKmean	Pearson Correlation	,248	1
	Sig. (2-tailed)	,221	
	N	26	27

Correlations

		OAPZGKmean	OAPSPORT
OAPZGKmean	Pearson Correlation	1	,304
	Sig. (2-tailed)		,131
	N	27	26
OAPSPORT	Pearson Correlation	,304	1
	Sig. (2-tailed)	,131	
	N	26	26

Correlations

		OAVZGKmean	OAVSPORT
OAVZGKmean	Pearson Correlation	1	,509**
	Sig. (2-tailed)		,008
	N	27	26
OAVSPORT	Pearson Correlation	,509**	1
	Sig. (2-tailed)	,008	
	N	26	26

**. Correlation is significant at the 0.01 level (2-tailed).

Statistics

Age (Descriptive)		
N	Valid	27
	Missing	0
Mean		29,74
Median		23,00
Std. Deviation		12,975
Range		43
Minimum		19
Maximum		62

Gender(Describtives)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	15	55,6	55,6	55,6
	Female	12	44,4	44,4	100,0
	Total	27	100,0	100,0	

Reliability Statistics (GK1-34)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,939	,936	34

Reliability Statistics(AGK1-AGK18)

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
,871	,867	18

Component Matrix[a]

	Component				
	1	2	3	4	5
AMGK1	,385	,656	-,466	,117	,120
AMGK2	,036	,480	-,591	,251	,407
AMGK3	,185	-,458	,293	-,504	,386
AMGK4	-,200	,400	,575	,554	-,239
AMGK5	,283	,080	,394	,544	,593
AMGK6	,336	-,306	,722	,023	,219
AMGK7	,714	,245	-,012	-,074	,126
AMGK8	,601	,212	,165	-,307	,037
AMGK9	,722	,393	-,012	-,321	,185
AMGK10	,347	,819	,013	-,204	,038
AMGK11	,486	,625	,472	-,141	-,228
AMGK12	,531	,731	,234	-,009	-,179
AMGK13	,838	-,329	,077	,048	-,074
AMGK14	,892	-,321	-,181	,060	-,090
AMGK15	,811	-,348	-,065	,102	,090
AMGK16	,873	-,309	-,129	,248	-,092
AMGK17	,879	-,300	-,144	,169	-,141
AMGK18	,862	-,242	-,167	,069	-,233

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

```
FACTOR
  /VARIABLES AMGK1 AMGK2 AMGK3 AMGK4 AMGK5 AMGK6 AMGK7 AMGK8 AMGK9 AMGK10
AMGK11 AMGK12 AMGK13 AMGK14 AMGK15 AMGK16 AMGK17 AMGK18
  /MISSING LISTWISE
  /ANALYSIS AMGK1 AMGK2 AMGK3 AMGK4 AMGK5 AMGK6 AMGK7 AMGK8 AMGK9 AMGK10
AMGK11 AMGK12 AMGK13 AMGK14 AMGK15 AMGK16 AMGK17 AMGK18
  /PRINT INITIAL EXTRACTION ROTATION
  /CRITERIA FACTORS(3) ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25) DELTA(0)
  /ROTATION OBLIMIN
  /METHOD=CORRELATION.
```

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6,879	38,217	38,217	6,879	38,217	38,217	6,398
2	3,561	19,784	58,000	3,561	19,784	58,000	4,222
3	2,073	11,518	69,518	2,073	11,518	69,518	2,606
4	1,310	7,277	76,795				
5	1,026	5,701	82,496				
6	,704	3,913	86,409				
7	,584	3,243	89,651				
8	,530	2,945	92,597				
9	,322	1,790	94,387				
10	,314	1,742	96,129				
11	,243	1,348	97,477				
12	,194	1,077	98,554				
13	,120	,667	99,221				
14	,053	,296	99,517				
15	,045	,248	99,765				
16	,031	,174	99,939				
17	,009	,052	99,992				
18	,002	,008	100,000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Component Matrix[a]

	Component		
	1	2	3
Zscore(AMGK1)	,385	,656	-,466
Zscore(AMGK2)	,036	,480	-,591
Zscore(AMGK3)	,185	-,458	,293
Zscore(AMGK4)	-,200	,400	,575
Zscore(AMGK5)	,283	,080	,394
Zscore(AMGK6)	,336	-,306	,722
Zscore(AMGK7)	,714	,245	-,012
Zscore(AMGK8)	,601	,212	,165
Zscore(AMGK9)	,722	,393	-,012
Zscore(AMGK10)	,347	,819	,013
Zscore(AMGK11)	,486	,625	,472
Zscore(AMGK12)	,531	,731	,234
Zscore(AMGK13)	,838	-,329	,077
Zscore(AMGK14)	,892	-,321	-,181
Zscore(AMGK15)	,811	-,348	-,065
Zscore(AMGK16)	,873	-,309	-,129
Zscore(AMGK17)	,879	-,300	-,144
Zscore(AMGK18)	,862	-,242	-,167

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,879	38,217	38,217	6,879	38,217	38,217
2	3,561	19,784	58,000	3,561	19,784	58,000
3	2,073	11,518	69,518	2,073	11,518	69,518
4	1,310	7,277	76,795			
5	1,026	5,701	82,496			
6	,704	3,913	86,409			
7	,584	3,243	89,651			
8	,530	2,945	92,597			
9	,322	1,790	94,387			
10	,314	1,742	96,129			
11	,243	1,348	97,477			
12	,194	1,077	98,554			
13	,120	,667	99,221			
14	,053	,296	99,517			
15	,045	,248	99,765			
16	,031	,174	99,939			
17	,009	,052	99,992			
18	,002	,008	100,000			

Extraction Method: Principal Component Analysis.

Table Correlations

		Zscore(Mean GeekismScale)	Zscore(PGA)	ZNFCSMean
Zscore(Mean GeekismScale)	Pearson Correlation	1	,324	,402*
	Sig. (2-tailed)		,152	,042
	N	26	21	26
Zscore(PGA)	Pearson Correlation	,324	1	,099
	Sig. (2-tailed)	,152		,663
	N	21	22	22
ZNFCSMean	Pearson Correlation	,402*	,099	1
	Sig. (2-tailed)	,042	,663	
	N	26	22	27

*. Correlation is significant at the 0.05 level (2-tailed).

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-,333	,1214	-,571	-,095	7,528	1	,006
[Gender=1]	,698	,1829	,339	1,056	14,547	1	,000
[Gender=2]	0[a]	.	.	.	.	.	.
ZPGA	,100	,1097	-,115	,315	,832	1	,362
ZNFCSMean	,135	,1918	-,241	,511	,493	1	,482
(Scale)	,147[b]	,0454	,080	,269			

Dependent Variable: Zscore(MeanGeekismScale)

Model: (Intercept), Gender, ZPGA, ZNFCSMean

a. Set to zero because this parameter is redundant.

b. Maximum likelihood estimate.

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-,155	,1767	-,502	,191	,773	1	,379
ZPGA	,168	,2344	-,292	,627	,512	1	,474
ZNFCSMean	,293	,4033	-,497	1,084	,529	1	,467
ZGKSMean	,580	,3520	-,109	1,270	2,719	1	,099
(Scale)	,647[a]	,1997	,353	1,185			

Dependent Variable: OGKmean

Model: (Intercept), ZPGA, ZNFCSMean, ZGKSMean

a. Maximum likelihood estimate.

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	,067	,2037	-,332	,466	,109	1	,742
ZPGA	-,125	,1947	-,506	,257	,409	1	,522
ZNFCSMean	,925	,3331	,272	1,577	7,705	1	,006
ZGKSMean	,351	,4639	-,558	1,260	,572	1	,449
[Gender=1] * ZGKSMean	-,492	,7364	-1,936	,951	,447	1	,504
[Gender=2] * ZGKSMean	0[a]	.	.	.	.	.	.
(Scale)	,442[b]	,1363	,241	,808			

Dependent Variable: SelfMastGKmean

Model: (Intercept), ZPGA, ZNFCSMean, ZGKSMean, Gender * ZGKSMean

a. Set to zero because this parameter is redundant.

b. Maximum likelihood estimate.

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-,103	,0743	-,249	,043	1,920	1	,166
ZPGA	,268	,0985	,075	,461	7,380	1	,007
ZGKSMean	,006	,1479	-,284	,296	,001	1	,969
ZNFCSMean	,194	,1695	-,138	,526	1,310	1	,252
(Scale)	,114[a]	,0353	,062	,209			

Dependent Variable: MGKmean

Model: (Intercept), ZPGA, ZGKSMean, ZNFCSMean

a. Maximum likelihood estimate.

INFORMED CONSENT

I, …….. (n*ame of the respondent)*

agree to participate in this research, that is executed by

Matthias Drees

I am aware, that the participation on this research is voluntary. I can stop participating at any time. I can get back or let erase my data that are collected during this research at any time.
The following aspects were explained to me:

1. The aim of this research is to gain insight in the perception of technologic products and motivation
2. My task will be to fill out different questionnaires.
   The whole research will take about 40 minutes. At the end the researcher will tell me the content of the study.
3. The participation in this study should not cause stress or discomfort.
4. The data that will be collected in the process of this research will be used anonymously.
5. The research will answer all further questions during the research, now or in the following procedure.

Signature Researcher: …… Date: ……..

Signature Respondent: …… Date: ……..

English

Instructions: The following statements represent types of goals that you may or may not have for unknown technologic- or software products you have to learn in the context of your University or workplace. Circle a number to indicate how true each statement is of you.

All of your responses will be kept anonymous and confidential. There are no right or wrong responses, so please be open and honest.

Please imagine a product you have learned in the recent past during your Work/University.

To correctly use the product	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To know the right way to use the product	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To know how the product functions	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To avoid incorrect use of the product	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To avoid not to know the right way to use the pro-dukt	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To avoid not knowing how the product functions	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To perform better with this product than I have done with these type of products in the past	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To improve my abilities with this and comparable products	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To work better with this product than I have done with similar products in the past	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To avoid working worse with this product than I have done with similar products in the past	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To avoid losing my abilities with this and similar products	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To avoid working worse than I normally work with similar products	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To work better than others with this product	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To perform well in comparison to others	Not true of me	O	O	O	O	O	O	O	Extremely true of me

To be better than others with this product	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To avoid working worse than others with this product	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To avoid being worse than others with this product	Not true of me	O	O	O	O	O	O	O	Extremely true of me
To avoid performing worse than others with this product	Not true of me	O	O	O	O	O	O	O	Extremely true of me

English

Instructions: The following statements represent types of goals that you may or may not have for the sport you exercise. Circle a number to indicate how true each statement is of you. All of you responses will be kept anonymous and confidential. There are no right or wrong responses, so please be open and honest.

To score a lot of points	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To win a competition	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To correctly exercise the sport/	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To avoid incorrectly exercise the sport	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To avoid losing a competition	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To avoid not scoring points	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To do better in this exercise/competition than I have done in similar one before	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing

To improve my technique in this sport	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To improve my abilities in this sport	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To avoid doing worse than I have done in the past on this sport	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To avoid losing my abilities in this sport	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To avoid performing worse than I have done on previous exercises/ competitions	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To outperform other sportsmen on the exercises/ competitions of this sport	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To do well compared to others who perform this sport	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To do better than my sport mates who perform this sport	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To avoid performing worse than other sportsmen in this sport	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To avoid performing poorly relative to my fellow sportsmen in the exercises/competitions of this sport	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing
To avoid doing poorly in comparison to others on the exercises/ competitions of this sport	Not true of me	O	O	O	O	O	O	O	Helemaal wel op mij van toepassing