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## The relationship between Gardner's multiple intelligences and students' achievement in third year physics of high school in the Varamin city

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### Abstract

Awareness of individual differences between the students is one of the most important principles for teachers in selecting of teaching methods. Using the Gardner's multiple intelligence theory in education, It seems we somewhat achieve to the education based on individual differences. In this study, we try to show that students who success in understanding physics have some components of Gardner's multiple intelligence. For this purpose, 364 male and female students who studied in third grade of high school were selected according to Cochran formula (with percent 5% error) through systematic sampling from 16 public schools in the Varamin city. In Iranian high school, there are three courses of study: technical and vocational course, career course and theoretical course. Our sample was selected from theoretical course. The theoretical course divide in three field: Mathematical/Physics, Experimental Sciences and Literate and Humanities. In this study, we focused on Mathematical/Physics; and Experimental Sciences field from theoretical course. We used the Gardner's multiple intelligence questionnaires to determine the rating of each component of intelligence and physics final exam to determine the students' achievement in third year physics. Using the multivariate descriptive-analytic method, we examined the relationship between Gardner's multiple intelligence and student achievement in third year physics of high school in the Varamin city. We used the Gardner's multiple intelligence questionnaires to determine the rating of each component of intelligence and the physics final exam to determine the students' achievement in third year physics. Data were analyzed Using SPSS software. To investigate the relationship between the physics score and each component of Gardner's multiple intelligence, we used the Pearson's correlation coefficient, T-test was used. We achieved important results such as: there is a positive relationship between the logical-mathematical intelligence component and the score of Physics, there is a negative relationship between the score of Physics and physical bodily-kinaesthetic intelligence and musical intelligence. Also, results showed there is no relationship between other components of intelligence and physics score.

Keywords: Gardner's multiple intelligences; students' achievement; physics.

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## 1. Introduction

Intelligence is, first and foremost, a judgment. *He's intelligent; he's not intelligent*, those are quick ways of saying that some behaviors of an individual observed in the past somehow predict how brilliant his next actions will be. Intelligence is an estimate of the quality that we attribute to the decision-making and abstract thinking of people around us. Although it may be practical for people to think of intelligence as something that exists, whether science should consider intelligence and how it would define it remains very controversial. There are, in short, two types of theories of intelligence. You can either believe that there is a single factor of intelligence that determines the level of ability that we have in any task – a theory put forward by Charles Spearman who hypothesized that each individual might have a *g* factor- a general intelligence factor. This intelligence factor would make people better at tasks that are apparently unrelated and likely demand very different cognitive abilities. The second set of theories of intelligence stipulate that intelligence is divided in distinct categories; people would have specific ease with tasks of a particular domain and there would be no single factor explaining performance across different domains of intelligence (Hampshire et al., 2012). For example Howard Gardner maintained that it is comprised of eight components: musical, bodily-kinesthetic, logical-mathematical, linguistic, spatial, interpersonal, intrapersonal and naturalist. Other definitions are: "Intelligence is what you do when you don't know what to do." "Intelligence is a hypothetical idea which we have defined as being reflected by certain types of behavior."

In this study, intelligence is considered based on Gardner's theory of multiple intelligences (MIT). MIT was proposed by Howard Gardner who is a contemporary psychologist at Harvard University. This theory has emerged from recent cognitive research and "documents the extent to which students possess different kinds of minds and therefore learn, remember, perform, and understand in different ways," according to Gardner (1991). According to this theory, "we are all able to know the world through language, logical-mathematical analysis, spatial representation, musical thinking, use of the body to solve problems or to make things, an understanding of other individuals, and an understanding of ourselves. Where individuals differ is in the strength of these intelligences - the so-called profile of intelligences -and in the ways in which such intelligences are invoked and combined to carry out different tasks, solve diverse problems, and progress in various domains. Gardner says that these differences challenge an educational system that assumes that everyone can learn the same materials in the same way and that a uniform, universal measure suffices to test student learning. Indeed, as currently constituted, our educational system is heavily biased toward linguistic modes of instruction and assessment and, to a somewhat lesser degree, toward logical-quantitative modes as well. Gardner argues that a contrasting set of assumptions is more likely to be educationally effective. Students learn in ways that are identifiably distinctive. The broad spectrum of students - and perhaps the society as a whole - would be better served if disciplines could be presented in a numbers of ways and learning could be assessed through a variety of means (Lane, 2015). Gardner has identified eight distinct intelligences: verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, naturalist.

According to Gardner's belief, MIT is based on attaching respect for individual's differences, a great variety of learning methods, evaluation techniques in these methods and several impacts that have been followed by such differences (Armstrong, 2009). MIT offers an effective model for understanding how all individuals learn, regardless of gender, ethnicity, socio-economic status or cultural background (Teele, 2002). Gardner has established educational methods that individuals are important in these methods so that they are able to achieve educational needs by alternatives (Sedar, 2007). According to Gardner belief, help to students to flourish their talents is the most important educational help and makes they have a feeling of satisfaction and competence. MIT should be viewed as a philosophy of education that provides a framework for examining individual's different strengths and developing the

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full spectrum of intelligence. This philosophy focuses on the content of learning and its relationship to different disciplines. In this philosophy, it is said to students: "your capacity is not limited, you must put in your position." (Teele, 2002). MIT is a new paradigm for those involved in education and makes they are faced with a new horizon of mission, implementation of educational programs and policies. This theory should be appreciated since it gives more human characteristics to the education system and embrace its difficulty of practice (MehrMohammadi, 2007). Improving educational status of students is one of the basic goals of contemporary education systems (Lavasani et al., 2007). In other words, one of the important issues that were addressed in the research field of education is the quality of teaching (Givvin, 2005; Good & Brophy, 1986, 2000; Clark, 2004). The results of many studies in this field have shown that improving the quality of teaching, increase the academic achievement of students (Sammons et al., 1995; Creemers, 1994; Walberg and Haertel, 1992). MIT can be used as a model for students success in organizational strategies. When students are actively engaged in the learning process and they believe that effectively and actively participate in the learning process, their motivation for learning is increased (Armstrong, 2009). In recent years, educational experts try to use MIT in curriculum and educate the students based on this theory (Nejad, 2008).

In continuing, Chan checked the relationship between perceived multiple intelligences and musical aptitude in a sample of gifted students in Hong-Kong. He showed that musical intelligence consistently emerged as the most significant predictor in predicting various components of musical aptitude lent support to the veridicality of self-perceptions of musical talent (Chan, 2007). Also, in another research, Motalebzade and Manoochehri (2008) examined the relationship between multiple intelligences and reading - comprehension skill in a sample of English language learners in the IELTS test. They showed among multiple intelligences, there is a meaningful relationship between the Logical -Mathematical intelligence and comprehension skill in English language learners. However many of researchers focused on education methods based on MIT and checked the relationship between this methods and scholastic achievement. Shore (2001) investigated the relationship between MIT and self-efficacy among university students who were studying English at the intermediate and advanced levels. Also, Koksai and Yel (2007) showed that the MIT- based instruction had a statistically significant effect upon the academic success of students and the permanence of teaching process whereas there was no significant effect of the MIT-based instruction on the attitudes of students towards the course.

In other research, the relationship between MIT and reading skill were examined among Kuwaiti students. The results showed that the experimental group who were educated under the programs of MIT throughout the academic year, compared to the control group had better performance (Al Balhan, 2006). In a semi-experimental study on the effects of education based on the MIT, students' achievements, attitudes toward chemistry and retention of knowledge in periodical features' variety at the 10th class were measured and compared. The comparison between experimental group, which was instructed through MIT learning strategies and materials, and control group thought by traditional methods was observed. It is concluded that there were significant differences between control and experimental group in post-test achievement and attitudes towards chemistry course (Akkuzu & Akcay, 2010). Since 2002, the researches about MIT and student achievement have started in Iran. In all studies, the effect of education based on MIT in different courses such as mathematics, foreign language and Persian spelling, compared to traditional methods. The results showed the students who were educated through methods based on MIT had a better educational performance compared to others (Niroo et al., 2013; Babapour et al., 2012; Ranjbari et al., 2013).

In Iranian educational system, the physics concepts are inserted in science textbooks from primary school but in high school, students have a physics textbook in theoretical course separately. High school education is divided into a theoretical program and a technical/vocational program. Theoretical program have three main fields of study: Mathematics/Physics, Experimental Sciences and Literate and

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Humanities. In Mathematics/Physics and Experimental Sciences field, students study physics in three year. However, we select our sample from these fields because they more involved with the physics subjects.

Physics is the science that attempts to describe how nature works using the language of mathematics. It is often considered the most fundamental of all the natural sciences and its theories attempt to describe the behavior of the smallest building blocks of matter, light, the Universe and everything in between. It is a fascinating subject and one would assume very useful to study. Yet observations and evidences show that majority of students would agree that physics is one of the more difficult subjects studied in school. Perhaps it is the general lack of understanding of what physics is, combined with the subject's inherent difficulty and reliance on mathematics, which tends to discourage a student from studying physics. In this study, the role of intelligence components of Gardner in learning physics is examined. Understanding this role can be effective for teachers to select appropriate teaching methods for teaching physics. Our sample was selected among students (girls and boys) who study in third grade of theoretical course (Mathematics/Physics and Experimental Sciences) in high school. We used the Gardner's multiple intelligence questionnaires to determine the rating of each component of intelligence and physics final exam to determine the student's achievement in third year physics and laboratory.

**Table 1. Features of various components of Gardner's multiple intelligences**

People who have high skills in the field of	Think	Need to:	Interested to :
Verbal-linguistic	To words	Books, tape recorder, multimedia, lecture, computers and games.	Reading, playing word games, making up poetry or stories.
Logical -Mathematical	Through Reasoning and calculating	logic games, investigations and mysteries	experiment, solve puzzles, ask cosmic questions
Visual-Spatial	To drawings, verbal and physical imagery	Models, graphics, charts, photographs, drawings, 3-D modeling, video, videoconferencing, television, multimedia, texts with pictures/charts/graphs.	draw, do jigsaw puzzles, read maps, daydream
Bodily-kinaesthetic	through physical activity, hands-on learning, acting out, role playing by turning lessons into lyrics, speaking rhythmically, tapping out time	equipment and real objects	movement, making things, touching
Musical		musical instruments, music, radio, stereo, CD-ROM, multimedia	music, but they are also sensitive to sounds in their environments
Interpersonal	through group activities, seminars, dialogues	telephone, audio conferencing, time and attention from the instructor, video conferencing, writing, computer conferencing, E-mail	understanding, interacting with others
Intrapersonal	through independent study and introspection	books, creative materials, diaries, privacy and time	understanding one's own interests, goals
Naturalist	Nature and natural form	Outside word, specific animals and tools such as lens and binoculars	collect, classify, or read about things from nature — rocks, fossils, butterflies, feathers, shells, and the like.

## 2. Research Questions

1. Is there meaningful relationship between different components of intelligence and the score of physics final exam?
2. Are the average scores of all components of intelligence different among girls and boys?
3. Are the average scores of all components of intelligence different among students who study in Mathematics/Physics and Experimental Sciences field?

## 3. Method

The method used in this research is descriptive-analytic multivariate. In this method the relationship between variables is analyzed based on research goals (Sarmad et al., 2012) and will be expressed mathematically (Delavar et al., 2009). This study was conducted in public schools in the Varamin city in Iran during the academic year from September 2015 to June 2016. In total, 530 third grade students (girls and boys) who studied Mathematics/Physics and Experimental Sciences field of theoretical course participated in this study from 16 public schools in the Varamin city. 72 female students and 55 male students studied in Mathematics/Physics field and 277 female students and 126 male students studied in Experimental Sciences field. According to Cochran formula (with percent 5% error) 364 male and female students were selected through systematic sampling: 66 female and 44 male from Mathematics/Physics field and 160 female and 94 male from Experimental Sciences field. After the selection of sample, the questionnaires were distributed.

## 4. Research Tools

The tool for collecting data was Gardner's multiple intelligence questionnaire in which intelligence is divided into eight distinct components: Verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, naturalist. The questionnaire consists of 80 questions in eight components of intelligence which 10 items devoted to each component. The questions are five options: (1) very little, (2) little, (3) A fair amount, (4) lot, (5) very lot. Face and content validity was confirmed by specialists and to check its reliability, Cronbach's alpha index constituents which is shown in Table 2 (Niroo et al., 2012).

**Table 2. Cronbach's alpha checklist of component of multiple intelligences**

Component of intelligences	Number of questions	Cronbach's alpha
Verbal-linguistic	10	0.817
logical-mathematical	10	0.77
visual-spatial	10	0.810
Bodily-kinaesthetic	10	0.739
Musical	10	0.852
Interpersonal	10	0.876
Intrapersonal	10	0.885
Naturalist	10	0.892

In this study, descriptive and inferential statistical methods were used to analyze data. Also, to examine a meaningful relationship between independent variables (Gardner's multiple intelligences) and the dependent variable (Physics scores) were used from Pearson correlation coefficients. T test was used to compare the relationship between independent variables (Gardner's multiple intelligences)

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between male and female groups and Mathematic/Physics and Experimental Sciences group as well as independent groups.

## 5. Results

In the first step, the descriptive statistics (mean, standard deviation scores) for the total sample of students (364) is examined and reported in table 3. The mean and standard deviation calculation reveals that the scores have a good dispersion.

**Table 3. The frequency of sample, the mean, standard deviation and other descriptive statistics variables of multiple Intelligences**

	Frequency	Frequency Percent	Female	Male
Mathematics/Physics	110	30.23%	66	44
Experimental Sciences	254	69.78%	160	94
Total	364	100%	226	138

  

	Mean(M)	Standard Deviation(SD)	Sample Number(S)
Physics Score	9.09	3.637	364
Verbal-linguistic	28.55	6.319	364
logical-mathematical	32.11	6.987	364
visual-spatial	32.56	6.259	364
Bodily-kinaesthetic	34.40	5.579	364
Musical	34.37	5.856	364
Interpersonal	33.98	5.488	364
Intrapersonal	30.84	7.635	364
Naturalist	31.95	6.398	364

In Table 4, the correlation coefficient of independent and dependent variables are reported. correlation coefficients indicate that the relationship between the physics scores and 4 component of intelligences: verbal-linguistic, interpersonal, intrapersonal and naturalist is very weak and close to zero. However, it can be concluded, there is not a meaningful relationship between the Physics scores and component of intelligences: verbal-linguistic, interpersonal, Intrapersonal and naturalist. The physics scores have a negative correlation with visual-spatial intelligence ( $r=-0.084$ ) and bodily-kinesthetic intelligence ( $r=-0.094$ ). Also, the relationship between the physics scores and visual-spatial intelligence in level of  $p=0.056$  is meaningless but the relationship between the physics scores and the bodily-kinesthetic in level of  $p=0.034$  is meaningful. The musical intelligence has the less correlation with the physics scores ( $r=-0.112$ ) which shows that there is a negative relationship between two variables. Its significant level is  $p=0.016$ . However, there is a negative and meaningful relationship between the Physics scores and the component of intelligences: Bodily-kinesthetic and musical. The logical-mathematical intelligence has the highest correlation with the Physics scores ( $r=0.169$ ) which shows that

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there is a positive relationship in significant level  $P=0.001$ . It can be concluded there is a positive and meaningful between the Physics scores and logical-mathematical intelligence.

**Table 4. The Correlation Coefficient between the Physics Scores and component of intelligences**

Component of intelligences	Pearson Correlation Coefficient (r)	Significant Level (P)	Number (N)
Verbal-Linguistic	-0.027	0.301	364
Logical-Mathematical	0.169	0.001	364
Visual-Spatial	-0.084	0.056	364
Bodily-Kinaesthetic	-0.096	0.034	364
Musical	-0.052	0.162	364
Interpersonal	0.033	0.262	364
Intrapersonal	-0.112	.016	364
Naturalist	0.049	0.178	364

It is used the T-test to compare the relationship between the independent variable and the Physics scores variable In both groups as well as groups of boys and girls and in Mathematics/Physics and Experimental Sciences field and also, it is used this test for significant difference of means. The results are shown in table 5 and table 6. The result of Levene's test for equality of variances is reported in table 5. Significant level for all variables is more than 0.005 which means that the physics score variance and scores variance in different component of intelligences are equal among boys and girls .The result for equality of means shows that T-value for physics scores is -5.098 and its significant level is 0.000. It means an average of two samples has statistically a significant difference. The T-value for verbal-linguistic component is 0.396 and its significant level is 0.693 that means an average of two samples has not statistically a significant difference. The t-value for logical-mathematical component is 1.350 and its significant level is 0.178 that means an average of two samples has not statistically a significant difference. Also, T-value for visual-spatial component is -0.679 and its significant level is 0.498 that means an average of two samples has not statistically a significant difference. T-value for bodily-kinesthetic component is -0.038 and its significant level is 0.970 that means an average of two samples has not statistically a significant difference. T-value for interpersonal component is -1.974 and its significant level is 0.049 that means an average of two samples has statistically a significant difference and also, T-value for Intrapersonal component is -2.224 and its significant level is 0.025 that means an average of two samples has statistically a significant difference. T-value for musical component is -2.124 and its significant level is 0.034 that means an average of two samples has statistically a significant difference. Finally, T-value for naturalist component is -0.397 and its significant level is 0.691 that means an average of two samples has not statistically a significant difference. Generally, it can be concluded the average of scores of verbal-linguistic, logical-mathematical, visual-spatial, bodily-kinaesthetic and naturalist intelligence have not a significant difference among the girls and boys. The average of physics scores and scores of musical, Interpersonal and Interpersonal has a significant difference.

The result of Levene's test for equality of variances is reported in table 6. Significant level F for all variables is more than 0.005 which means that the physics score variance and scores variance in different component of intelligences are equal for Mathematical/Physics and Experimental Sciences field. The result for equality of averages shows that T-value for physics

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score is 3.713 and its significant level is 0.000. It means an average of two samples has statistically a significant difference. The T-value for verbal-linguistic component is -2.427 and its significant level is 0.016 that means an average of two samples has statistically a significant difference. The T-value for logical-mathematical component is -0.813 and its significant level is 0.417 that means an average of two samples has not statistically a significant difference. Also, T-value for visual-spatial component is -3.112 and its significant level is 0.002 that means an average of two samples has statistically a significant difference. T-value for bodily-kinaesthetic component is -0.855 and its significant level is 0.393 that means an average of two samples has not statistically a significant difference. T-value for Interpersonal component is -2.896 and its significant level is 0.004 that means an average of two samples has statistically a significant difference and also, T-value for intrapersonal component is -0.081 and its significant level is 0.936 that means an average of two samples has not statistically a significant difference. Also, T-value for musical component is -2.343 and its significant level is 0.020 that means an average of two samples has statistically a significant difference. Finally, T-value for naturalist component is -3.177 and its significant level is 0.002 that means an average of two samples has statistically a significant difference. In other words, it can be said the average scores of logical-Mathematical, bodily-kinesthetic and intrapersonal intelligences have not a significant difference to each other among Mathematic/Physics and Experimental Sciences field, however we can conclude the field is not an effective factor for achievement in physics. The average scores of verbal-linguistic, visual-spatial, interpersonal, musical and naturalist interpersonal intelligence have a significant difference to each other that means the students who study in Mathematical/Physics and Experimental Sciences learn in different ways because they differ in the strength of components of intelligences.

## 6. Conclusion

Despite the behaviorism, Cognitivism believes the constructive approach to learning process. In this approach, students are not as a mere recipient of information, but he/she can be considered as the creator of his/her cognitive structures. Learner must also receive information, process them, linking to previous experiences and organize what they learn to solve the real life problems and various complex problems in new condition (Prawat & Folden, 1994). However, it is necessary understanding the abilities and the intelligence capabilities of students to plan the teaching-learning process. Categorizing the students in different intelligence domains does not mean that they should keep the certain determined levels in those intelligence domains. Every individual can improve their intelligence levels up to certain levels as long as they had the sufficient education (Gardner, 1983). Teachers who teach towards the Multiple Intelligences realize the benefits such as active learners and successful students. Each of the intelligences is potential in every learner and it is part of a teacher's job to nurture and help the children develop their own intelligences" (Nolen, 2003). In this study, we showed that: There is a relationship between the physics scores and logical-mathematical intelligence, There is not a relationship between the physics score and musical and bodily-kinesthetic intelligence. ,The average scores of musical, intrapersonal and interpersonal intelligence differ from each other significantly among female and male students that means they differ in intelligence components and for effective learning, this difference should be considered in the choice of teaching methods for these groups.,The average scores of verbal-linguistic, visual-spatial, interpersonal, musical and naturalist intelligence differ from each other significantly among Mathematical/Physics and Experimental Sciences,The gender and field study are not effective factors for achievement in physics.

Generally, these results show that awareness of individual differences of students, apart from gender and field study, based on their domain of intelligence can help teachers in utilizing various methods of teaching and makes the learning is easier for students. Gardner suggested that teachers can use from a wide variety of teaching methods, such as music, cooperative learning, art activities.... . These teaching



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methods make those education compatibles with mental qualities, abilities and unique needs of the student. For this mean, it is proposed that in-service training courses for teachers be considered to meet various teaching methods based on the theory of multiple intelligences. Also, the awareness of individual differences between the students makes that teacher select suitable method for teaching various subjects. Because the next generation will live in a world.

**Table 5. The T-test between the Physics Score and component of intelligences among girls and boys**

variable	gender	Number	Average	Standard Deviation	F	Significant Level	t	Degrees of freedom	Significant Level of two Domain	Difference of Averages	Difference of Standard Deviation
Physics Score	Female	226	9.825	3.304	2.45	0.118	-5.098	362	0.000	-1.938	0.380
	Male	138	7.888	3.843	0						
Verbal-linguistic	Female	226	28.45	6.229	0.29	0.591	0.396	362	0.693	0.270	0.683
	Male	138	28.72	6.483	0						
logical-mathematical	Female	226	72.31	6.719	1.05	0.306	1.350	362	0.178	1.018	0.754
	Male	138	32.74	7.385	2						
visual-spatial	Female	226	32.73	6.306	0.11	0.736	-0.679	362	0.498	-0.459	0.677
	Male	138	32.28	6.195	4						
Bodily-kinaesthetic	Female	226	34.41	5.292	3.54	0.061	-0.038	362	0.970	-0.023	0.604
	Male	138	34.38	6.040	3						
Musical	Female	226	34.85	5.865	0.02	0.881	-1.974	362	0.049	-1.244	0.630
	Male	138	33.60	5.780	2						
Interpersonal	Female	226	33.48	5.641	1.26	0.262	-2.244	362	0.025	-1.323	0.590
	Male	138	33.16	5.144	3						
Intrapersonal	Female	226	31.50	7.430	0.417	0.519	-2.124	362	0.034	-1.744	0.821
	Male	138	29.76	7.866							
Naturalist	Female	226	32.06	6.430	0.00	0.924	-0.397	362	0.691	-0.275	0.692
	Male	138	31.78	6.365	9						

Bahrami, S. & Nasab, R. S. (2017). The relationship between Gardner's multiple intelligences and students' achievement in third year physics of high school in the Varamin city. *New Trends and Issues Proceedings on Humanities and Social Sciences*. [Online]. 11, pp 613-623. Available from: [www.prosoc.eu](http://www.prosoc.eu)

**Table 6. The T-test result between the Physics Score and component of intelligences among mathematical/physics and experimental sciences field**

variable	field	Number	Average	Standard Deviation	F	Significant Level	t	Degrees of freedom	Significant Level of two Domain	Difference of Averages	Difference of Standard Deviation
Physics Score	MP <sup>1</sup>	110	10.148	3.669	0.09	0.759	3.713	362	0.000	1.515	0.408
	ES <sup>2</sup>	254	8.632	3.533	4						
Verbal-Linguistic	MP	110	27.34	6.200	0.01	0.891	-2.427	362	0.016	-1.738	0.716
	ES	254	29.07	6.309	9						
Logical-Mathematical	MP	110	31.65	7.010	0.04	0.829	-0.813	362	0.417	-0.649	0.798
	ES	254	32.30	6.981	7						
Visual-Spatial	MP	110	31.03	6.430	0.38	0.537	-3.112	362	0.002	-2.197	0.706
	ES	254	33.22	6.077	2						
Bodily-Kinaesthetic	MP	110	34.02	6.157	2.62	0.106	-0.855	362	0.393	-0.545	0.637
	ES	254	34.56	5.134	5						
Musical	MP	110	33.04	5.826	0.16	0.685	-2.896	362	0.004	-1.196	0.662
	ES	254	34.95	5.785	5						
Interpersonal	MP	110	33.95	5.512	0.05	0.814	-0.081	362	0.936	-0.051	0.627
	ES	254	34.00	5.488	5						
Intrapersonal	MP	110	29.43	8.015	0.03	0.845	-2.343	362	0.020	-2.029	0.866
	ES	254	31.46	7.396	8						
Naturalist	MP	110	30.35	6.783	3.60	0.058	-3.177	362	0.002	-2.291	0.721
	ES	254	32.65	6.108	8						

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