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Context versus rote learning in the martial arts

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CONTEXT VERSUS ROTE LEARNING IN THE MARTIAL ARTS

A Thesis

by

PEARSON F. KLEIN

Submitted to the Graduate School of
The University of Texas-Pan American
In partial fulfillment of the requirements for the degree of

MASTER OF ARTS

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Major Subject: Experimental Psychology – BCBA Concentration

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December 2010

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ABSTRACT

Klein, Pearson, Context Versus Rote Learning in the Martial Arts. Master of Arts (MA), December, 2010, 32 pp., 3 tables, references, 29 titles.

Research has shown that when learning martial arts katas, adults retained the information better “when the katas were taught with the context method than when the katas were taught with the no context method.” (Tovar, M.) It is imperative more experimentation be performed in this area because the findings do not relate to the population of children. Children between ages seven and twelve were instructed in two original katas utilizing two methods of instruction. First the katas with context were taught and then the other taught was purely based on rote completion of the sequential movements. Every subject was tested in a context and a rote condition. Four groups were defined in which kata was paired with Context and whether the Context condition came first or second. The results show that context enhanced learning on easier movements but impeded learning with more difficult movements.

DEDICATION

I would like to dedicate this project to my friends and family who have been supportive of all of my life's endeavors, whether educational or extracurricular, and who have been responsible for my becoming the person I am today.

ACKNOWLEDGEMENTS

I want to thank my Taekwondo Senior Master Instructor Robert Davis who has been a mentor and friend for many years and is responsible for all I have achieved in the world of martial arts. I would like to thank all of the Taekwondo students and non-students who participated in this project and wish them continued success in their martial art careers or other endeavors. I would like to thank Dr. Frederick Ernst who gave me this great opportunity at a time when I most needed it and as a result will forever be grateful. This program has been beneficial to my growth and development as a person on many levels and Dr. Ernst is the primary reason why I chose this path. I would like to thank all of my classmates in the first cohort of the M.A. Experimental Psychology – BCBA concentration program at the University of Texas – Pan American for their continued fellowship, as I was the only non-psychology undergraduate. I thank them for forcing me to continue competing for success in academia. Finally, I would like to thank my thesis advisor, Dr. James Aldridge, and committee members Dr. Grant Benham, and Dr. Jerwen Jou, for their incredible assistance through the thesis process and guidance along the path to success.

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CHAPTER I

INTRODUCTION

The martial arts are collectively and commonly viewed as both scientific and artful endeavors. Generally speaking, they are various combat styles which all have different viewpoints on how best to defend oneself from a physical threat. The term “martial arts” was derived from the military as many different “martial art” forms came from specific country militaries (i.e. Taekwondo and Korea.) (Gillis, 2008) There are a wide variety of “martial arts” which are primarily characterized by the types of movements and methods of defense they employ. There are 3 fundamental categories of martial arts: 1.) Striking arts, i.e. Taekwondo, Kung Fu, Muay Tai; 2.) Evasion arts i.e. Aikido, Tai Chi; and 3.) Grappling arts i.e. Brazilian Jujitsu, Judo, and even Greco-Roman wrestling. All of these arts, regardless of their approach to defense, fall into an overall broader category known as “martial arts.” (<http://www.thefreedictionary.com/martial+art>)

The majority of research conducted in this area has been concerned with the overall physiological and psychological benefits of martial arts practice, of which there are many, rather than the effectiveness of different strategies of instruction. (Tovar, 2006) The present study will investigate whether instructing children in the martial arts is preferable in a contextual approach (observing the real world application of different movements and purpose) or rather sheer rote teaching of movements without context as a youth’s overall ability to cognitively interpret the idiosyncrasies of the arts may not be as developed and, thus, his/her ability to properly process the context is possible

Background in the Martial Arts:

The subjects of this study will be introduced to the art of Taekwondo. The art was named on April 11, 1955 which makes it relatively new compared to other martial arts which have been practiced for thousands of years.(Gillis, 2008) Taekwondo was introduced as the national art of Korea in that year. (Gillis, 2008) The art of Taekwondo can be seen practiced in almost every part of the world today; however, it was developed in Korea prior to the separation of the North and South sections which currently remain. (Gillis, 2008) In its simplest meaning, Taekwondo literally means, foot, hand, and a way of life or art. In a more formal definition it is the art of defending oneself by striking the opponent with the foot and hand. (Gillis, 2008)

Taekwondo was brought to North America during the 1950's after being named the national sport of the Korean people. (Gillis, 2008) Taekwondo has its roots in Shotokan karate as well as Tang Soo Do. (Gillis, 2008) The originating Taekwondo Grandmasters incorporated the kicks of Tang Soo Do with the hand techniques of Shotokan karate to formulate this new art form. (Gillis, 2008) However, the primary distinguishing characteristic of taekwondo in comparison with other striking arts is the abundance of jumping and spinning kicks versus the traditional stationary strikes. Taekwondo, also as opposed to other arts, has an emphasis on blocks to protect oneself prior to striking the opponent as self-control is preached and is one of its common practices or tenets. Taekwondo uses prearranged sequences of movements called "katas," which are dedicated to emulating fighting imaginary opponents, which emphasize speed, accuracy, timing, movement, and real life application of the techniques as the primary basis for learning the techniques in the art. (Davis) Adequate performance of the "katas" is the primary requirement for rank promotion and, gradually, the standards for execution increase as rank and difficulty of "katas" increase. Other requirements for rank progression are sparring ability,

breaking of wood boards with techniques, non-contact self-defense demonstrations, and overall character of the student (Davis, 2008).

CHAPTER II

LITERATURE REVIEW

Research in the Martial Arts

The Martial Arts as a Way of Life

The majority of research in martial arts is fairly broad. The majority of the conducted research is dedicated towards the reasons why one enters into a martial arts curriculum. Columbus and Rice (1998) examined written descriptions of reasons individuals participate in martial arts and found four themes: 1) protection from potential victimization by criminals or attackers; 2) growth and discovery including challenging the self mentally, physically, or spiritually; 3) life transitions and wanting to get life in control or an overall sense of balance in one's life, and 4) task performance and seeing martial arts achievement as contributing to achieving in other life situations and tasks. These themes are founded on a desire for life enhancement due to the encompassing view of the martial arts as a way of life, hence the Japanese word "Do" meaning "life's way" in many of the arts' names, rather than simply a sport.

Studies in this area have shown that martial art training also has a positive impact on psychological variables, and under some circumstances, indicate that this training helps improving social skills development in group interactions (Lakes, & Hoyt, 2004). In some cases, training in the traditional martial arts has been shown to reduce aggressiveness of children in schools. (Mastrostefano-Curran, 2004; Nosanchuk, 1981,1989). This is not surprising given that the martial arts require much discipline to succeed in them. The martial arts also have been

shown to significantly increase self-esteem in women. (Clanton, 2004.) In the realm of psychological well-being, the martial arts have been found to help people who are suffering from several disorders including adult depression (Clemons, 2005) and Attention Deficit Hyperactivity Disorder (ADHD) in children (Morand, 2004). The martial arts have increased the sense of family unity and a sense of character growth in children as “martial arts parents consistently report that their child’s involvement in martial arts has helped their children develop and practice respect for both the self and for other people.” (Lantz, 2002, p.572).

Martial Arts instructional methods. It is widely accepted that the three primary teaching methods in the martial arts are Kihon, Kumite, and Kata or more loosely practicing of techniques (Kihon), sparring against opponents (Kumite), and learning of forms (Kata). Kihon in Taekwondo includes the practice of correct body form and breathing, while practicing basics such as stances, punches, kicks, and blocks. Taekwondo also emphasizes sparring against opponents in both the classroom setting and competition (Kumite). In Taekwondo, the primary method of teaching necessary for rank promotion is “Kata” which includes the memorization and performance of the kata. (Davis) As with any type of physical activity there are multiple ways of instructing the activity to one’s audience. Unfortunately there has not been enough research conducted which examines the best methods of instruction in the martial arts.

Imagery as a teaching tool. Taekwondo is centered on natural body and hip movement; some of the movements will simulate similar motions in sports such as: football stances, shooting basketball jump shots, throwing a baseball, among others. Using this imagery might make Taekwondo, in proper context, more understandable. One learning this art can develop the muscle memory necessary to promote success in other sports realms. The imagery that Taekwondo naturally creates may foster a sense of success if explained in a proper context. The

research has shown that using imagery may enhance the learning process. This imagery includes using the mental visualization of the activity before performing it or, in other words, learning the context of a move before performing it (Romero, & Silvestri, 1990; Grouios, 1992; Pie, & Tenenbaum, 1996.) Imagery, or context learning, has been shown to improve overall performance in various motor activities or sports such as golf (Smith, & Holmes 2004; Thomas, & Fogarty 1997), softball (Calmels, Berthoumieux, & d'Arripe-Longueville, 2004), adolescent tennis players (Mamassis and Doganis, 2004), high school basketball in female players (Cumming, Hall, & Shrambrook, 2004), gymnastics (Calmels, 2001), and climbing (Boyd, & Munroe, 2003).

Despite these examples' reflecting the importance of mentally picturing the movement before actually performing it, they do not examine how to emphasize remembering a set of movements in order, which would be necessary in the martial arts for learning kata successfully, learning combinations of self-defense movements, and timing. Because katas simulate fighting against real life opponents or attackers, the practitioner performing them has to imagine one or more opponents attacking him/her in different forms (punches or kicks) or locations (front, back, or sides).

Research has demonstrated that with adult martial art practitioners, learning the “movement with the repetition and the explanation of the movement helped the practitioner learn such attacks and blocks more accurately.” (Tovar, 2006, p. 26.) For Tovar's study, 30 adults (26 male, 4 female) with less than six months of prior martial arts experience, were taught two original katas by the primary investigator. Each of the two katas was composed of 7 combinations of movements that increased in level of difficulty as the form progressed. The independent variable in the study was the presence or absence of context of the movement taught

in the kata. When teaching in the context method, after the investigator showed the individual movement to the participants, a black belt assistant attacked the investigator in order to show the purpose of the movement, thus demonstrating its real life application. This was done 3 times for each combination of movements and then the investigator repeated the movements in the open space with the participants for two minutes. In contrast, when teaching with the no context method, the participants repeated the movement in the open space and without the exposure of the real application of the movements. The first group was exposed to kata 1 with context and then presented kata 2 with no context. The other group was exposed to kata 1 first and then taught kata 2 with context.

The results of this study showed a main effect for the context condition in both the performance and correct movement recalled scores. This study shows a greater propensity for learning in adults given the use of imagery and context in the martial arts. However, little is known about the most efficient manner of learning in the age demographic of a major proportion of martial art practitioners, children. To operate a successful martial arts school and curriculum one must be able to teach children as well as teenagers/adults alike. Simply teaching adults in one manner does not ensure teaching children will yield similar success. Thus it is clear that more research must be conducted that examines the most efficient way to teach the martial arts which promotes greater speed in learning the motor processes which encompass the art form.

CHAPTER III

RESEARCH DESIGN

Research Hypothesis

In any type of educational setting there is more than one method to teach the required material. The manner in which an instructor chooses to teach will vary across the type of material, the types of students (on the basis of sex, mental disabilities, physical disabilities, etc), the age or maturity of the students, and other factors. Despite the martial arts' having a wide range of differences between them, some common elements exist throughout. In general, martial arts involve being able to defend oneself with automatic reaction. One will usually not have much time in which to defend oneself from an attack and counter the attack before the attacker is able to attempt another attack. It is because of this that teaching the body to perform these movements in a natural way is essential. Just as some forms of behavior can be seen as on an "ABC" contingency (Antecedent, Behavior, Consequence) the martial arts can be seen as the same thing. An attacker attacks (antecedent), the other person must block to protect himself/herself (behavior), resulting in the attacker's no longer attacking the potential victim (consequence.) However, it is hard to expect one's body to perform this behavior without consistent reinforcement or practice of these behaviors. The question then becomes what is the most appropriate way to teach the body to do this with such a low amount of reaction time without room for error. To better learn the techniques it may be helpful to understand the purpose of the motion.

For example, when teaching a student to block an attack aimed at their head it is imperative that he/she understand the purpose of this motion or else the body may perceive the action as a maneuver it should do only when advised by the instructor. The movement merely becomes a type of choreography that serves no more purpose than to comply with an instructor's command.

This would be similar to a student learning that 10 multiplied by 10 equals 100 without actually being able to write the problem while adding 10 10 times but he merely knows to respond with 100 whenever the teacher asks "what is 10 times 10?". By contrast, if the purpose and context is learned before doing each individual repetition of the movement, the person may think of the movement as a block (or attack depending on the technique) and as the person repeats the movement, he/she can imagine a situation in which he/she uses the technique properly, thus showing a greater understanding of the primary purpose of the technique.

Previous research conducted on adults has shown that learning the martial arts with repetition of techniques while being given a proper context results in faster and more enhanced learning of the art form as opposed to mere repetition learning. The hypothesis of this study proposes that children, in comparison with teens or adults, are best taught by rote practice of the techniques in an attempt to create "muscle memory" and once reaching a higher level of cognitive functioning, reinforcing the context with the already learned repetition of movements will make for the best instruction. Furthermore, if there is a series of movements to be learned, if the specific contexts of techniques are taught along with the basic movements, it may hinder a child's ability to learn the movement as he/she may be confused by the complexity of the terminology. Children as a whole will be better at learning sequences of movement with sheer

repetition than with repetition and context learning. Simply put, the more one explains to a younger audience, the slower will be the progression of learning the art.

Method

Participants. Participants were children, both male and female, recruited from Bob Davis Karate schools, or through mutual acquaintances of friends or family, ranging from ages 6 – 12 with 12 months or less of previous martial arts experience. The parents of participants read and signed an informed consent document prior to participation in the study. Parents of participants were assured that the risks of this study were not greater than those that would be found in any regular Taekwondo class. Participants and parents were both informed that the participants would be learning 2 new Katas and would be tested on their recall of them. Furthermore, they were informed that the results of their individual performance would have no bearing on their ranking in the Taekwondo curriculum if they were a student of the school, to encourage voluntary participation.

The main investigator of this study, Pearson Klein, is a 4th degree black belt in Taekwondo and an assistant Master Instructor at Bob Davis Karate Schools in McAllen, Texas. He has been studying the art of Taekwondo for eighteen years and began at the age of 8. He has competed regionally and nationally within the International Chin-Mu-Kwan Taekwondo Federation. He created two new and original katas, or forms, which are prearranged sets of movements used to simulate real life instances of combat that emphasize timing, speed, and accuracy. Each of these katas is made up of 10 movements apiece that increase progressively in complexity and difficulty.

Experimental Design. This design is a mixed factorial design with both between subjects and within subjects variables. Context or No Context, the variable of primary interest

was compared within subjects. The between subjects variable (groups) consisted of counterbalancing order of context presentation and pairings of context with kata. Each group contained 5 participants. Groups were created as follows:

Group 1. Context condition first - Kata 1:

Group 2. Context condition second - Kata 2:

Group 3. Context condition first - Kata 2:

Group 4: Context condition second - Kata 1:

Upon completion of the first condition and the scoring of correctly repeated movements, the participants would then learn the second condition which was then scored.

Procedure. When teaching the Katas with the context method, the investigator showed each individual movement to the participants and demonstrated the application of the movement with the help of the participant in an exchange of movement simulating combat. This was done 3 times for each movement eventually reaching completion of the full sequence. In contrast, when teaching with the rote method, the participants repeated the movements 3 times each in the open space and without the exposure of the real applications of the movements. The movements would be repeated each 3 times leading to eventual completion of the Kata. While each participant was performing the kata for grading, he/she was being video recorded (all parents signed an informed consent form prior to the beginning of the experiment to allow their children to be videotaped for proper scoring accuracy) and were scored three times. The first grading was based on the primary researcher's recollection and graded a second time with the video version to ensure proper scoring. The participant was scored a third time by an assistant scorer with the video in order to ensure interrater reliability. If there were any discrepancies between the scoring

of the assistant and the primary investigator both deliberated and agreed upon one final score which was then used for the data.

The evaluating criteria were based on one main score: the correct number of movements performed. Specific detailed elements of Taekwondo such as stances and body positioning were not included in the measurement of adequate performance. The grading parameter of performance was the ability to perform the technique sufficiently well enough for the investigator to comprehend the technique intended. The scale of measurement the investigator used to grade the participants performance ranged from 0 to 10 (0 being complete absence of movement and 10 representing the highest score based on the investigator's perceptions). After each participant was evaluated for their performance in the first Kata, the investigator began to teach the second Kata using the opposite method at the second portion of the session with the given participant. In order for the investigator to assure the participants were not exposed to the Kata to be taught prior to the session each participant was taught their first Kata at a time during a private session, or if that were not possible, in the backroom of the Karate school, or in participant's home, where other participants could not view the experiment in progress. After each participant was finished with the process of learning the Katas, he/she was asked questions in order to provide some basic information about which form he/she interpreted to be more difficult and why and which method of teaching he/she preferred.

Results.

Means and standard deviations for scores are presented in table 1. A 4 (groups) X 2 (context vs. rote) ANOVA was calculated to examine the impact of context on learning based on the number of correct movements recalled as assessed by the rating of expert judges.

The results show that there was no main effect for Group, ($F(3, 16) < 1$, $MSE=8.4$). There was no main effect for Context, ($F(1, 16) < 1$, $MSE=4.825$). This would indicate that context learning as a whole was not superior to rote learning of motor movements among the population. The Group X Context interaction fell just short of significance, $F(3, 16) = 3.164$, $p = .053$, $MSE=4.825$. Figure 1 reveals the nature of the interaction for Group X Context. The figure shows the nature of the context effect for each group, with the legend showing the group's nature. For example, Group 1 (g1) had the Context condition applied first, using kata Form 1. The two groups that had the Context condition presented using kata 1 showed a mean greater score using context. This happened whether the Context/kata 1 condition was applied first (g1) or second (g4). By contrast, in the other two groups, in which Context was paired with kata 2, context interestingly worsened performance. This event occurred whether the Context/kata 2 condition was administered first (g3) or second (g2).

Table 1

GROUP 1 SCORES	FORM 1 CONTEXT SCORE	FORM 2 ROTE SCORE
MEANS	8.2	6.8
STANDARD DEVIATION	1.095	1.643

Table 2

GROUP 2 SCORES	FORM 1 ROTE SCORE	FORM 2 CONTEXT SCORE
MEANS	6.8	6.4
STANDARD DEVIATION	3.347	2.966

Table 3

GROUP 3 SCORES	FORM 2 CONTEXT SCORE	FORM 1 ROTE SCORE
MEANS	6	7.4
STANDARD DEVIATION	1.802	2.074

Table 4

GROUP 4 SCORES	FORM 2 ROTE SCORE	FORM 1 CONTEXT SCORE
MEANS	7.2	8.6
STANDARD DEVIATION	1.947	2.073

Tables 1-4. Means and Standard Deviation scores of correctly recalled movements for context and rote conditions by group affiliation.

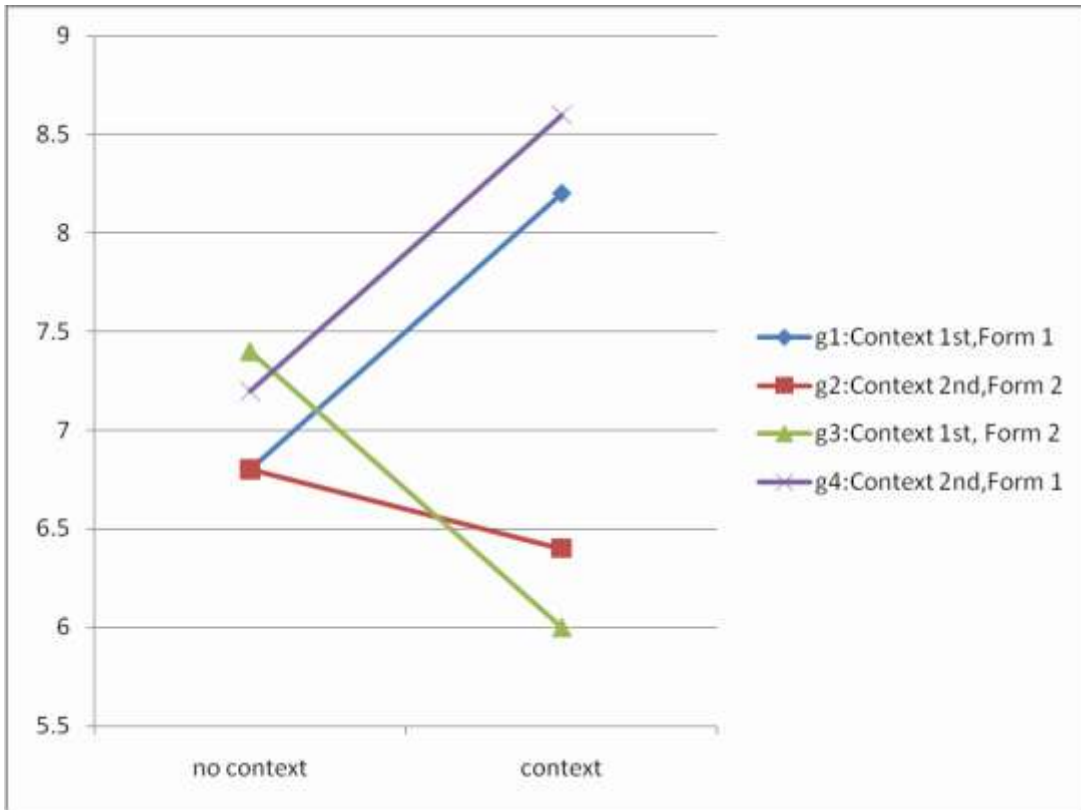


Figure 1: Mean moves recalled as a function of context, with Group as parameter.

CHAPTER IV

DISCUSSION

The main purpose of this study was to compare two different methods of learning the martial arts. One of these methods consisted of purely rote learning, or learning strictly through the repetition of the movements. The other method was context learning, which included not only the repetition of movements but also the “context” in which the move was performed. “Context” in this setting refers to whether the move is a block, strike, or kick, why it is done a certain way, and why the direction and hand placement is where it is, among other details specific to Taekwondo, the art studied.

There was no main effect for Context. This would indicate that context learning as a whole was not superior to rote learning of motor movements among the child population. The hypothesis of this study posited that children within the age groups of 6-12 years of age would learn motor movement sequences at a higher rate by being taught the movements through rote learning as opposed to context learning. This was found for one kata but not the other. Previous research conducted on adults has shown that adults learning the martial arts with repetition of techniques while given a proper context results in faster and more enhanced learning of the art form as opposed to mere repetition learning (Tovar, 2006); however, this study only partially demonstrates the same results within the different population (adults vs. children). The combined mean was 7 correctly performed moves out of 10 for all groups regardless of presentation order of context.

When compared to previous work (Tovar, 2006) the context condition did not prove to be the best approach to learning efficiently. In two of the four conditions the context condition groups mean score was lower (groups 2 and 3) than the rote condition group means score among the same participants. When context was presented on kata1 the scores were consistently higher among all groups compared to kata 2. Elements of kata 1 may have been inherently easier to learn and/or recall. Since kata 1 with context had higher scores than kata 2 with context one could deduct the conclusion that it was easier to be performed. Furthermore when asked, the majority of subjects indicated they felt that kata 2 was harder to perform than kata 1 due to either a level of difficulty of moves or lack of knowledge of the techniques contained. The katas were created to be similar to each other for purposes of efficiency. Both katas began with blocks in the same direction and all the major turns were identical. Within the population of 6-12 year olds learning the martial arts, it may be feasible that learning kicks when given context may be easier to perform than hand strikes. If kicks are more likely to be performed when context is provided than strikes/hand techniques this would lead to the disparity in scores between the kata 1 group means and kata 2 group means. The breakdown of kata 1 was 5 blocks, 2 strikes, and 3 kicks and kata 2 contained 5 blocks, 3 strikes, and 2 kicks. While the difference in the two katas was one kick versus one hand strike, if kicks are easier to perform when given context, this would certainly lead to a greater probability of the kata containing more kicks to be higher scored by participants, which in this case happened. It is interesting to note that in the rote condition the 2 katas showed little variability as the mean score of these participants was 7 regardless of which kata was in the rote condition. It would be fair to say that possibly the easier kata on the basis of containing more kicks when given context was easier to recall but the second kata which was viewed as more difficult was hindered by the presence of context. This would lead to the

deduction that within this population, rote learning does not regress or progress learning of motor movements; however, context when taught to easier movements will progress their performance and hinder their performance when implemented to more difficult movements.

Previous research (Tovar, 2006) has shown that there was a consistent trend for scores to be higher in the second round of testing when the contextual method was presented first. This could be the result of a carryover effect and subjects being more familiar with the types of movements they will need to demonstrate the second time. The results of this study show that within the third group of participants, in which the second kata was presented in the context condition first and the first kata presented second in the rote condition, this held true. However, when the kata presentation was switched in groups 1 and 4 where kata one was taught under the context condition and kata two in the rote condition, the scores were much lower in the rote condition showing a direct propensity for context to be a major factor in learning. This disparity among group difference shows the results to be inconclusive about either condition being more efficient.

This study had a number of limitations. One limitation is the lack of ability for score variability. The katas having only 10 movements limited the potential for score variability since 10 is a relatively low number. Had the katas been longer in length, the score variability may have resulted in greater variability on the basis of the greater chance for mistake. The low number of necessary completed movements resulted in inherently low score variability.

Another potential limitation is that this study was limited only to Kata. The majority of martial arts incorporate not just kata but also kumite (sparring) and kihon (practice of movements in the air not in a prearranged format) in their curricula. There is no way of knowing whether context or rote learning would promote more efficient learning in either of the other two

elements of martial arts training. Investigating these topics would lead to interesting future research.

This experiment did not allow for all of the possible kata combinations to be examined thus the potential to do an Analysis of Variance on other variables such as order of katas, kata 1 versus kata 2. Further research on context learning on the martial arts should focus on these other variables in teaching of the arts and the results could potentially benefit not just martial artists or instructors but a coach in any capacity that involves motor movements. The subject of context versus rote learning is vast and warrants attention as more knowledge can benefit many people in many different learning experiences.

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APPENDIX

APPENDIX A

INFORMED CONSENT

The University of Texas Pan American

INFORMED CONSENT

FORM Study Title: “Rote versus Context Learning in the

Martial Arts” Investigator: Pearson Klein, B.A.

Background: I am conducting a study to compare different methods of instructing martial arts. This research is being conducted to satisfy thesis requirements as part of my Master of Arts degree in Experimental Psychology. Dr. Jim Aldridge, a professor at the University of Texas-Pan American, is serving as my thesis chair for this study. If your child participates, he/she will be one of approximately 30 children who will be taking part in this study. In order to participate, your child must be between 7-12 years of age with less than 9 months of experience in martial arts.

Procedure: If your child participates, he/she will be asked to attend a one-hour individual session at the Bob Davis Karate Schools at a time/date mutually agreeable to both the participant and the researcher.

The one-hour session will involve two 30-minute sessions. During each session, the following procedures will be followed:

- The researcher will teach your child a new kata (form). Each kata consists of 10 movements and is composed of different techniques (punches, kicks, blocks). Some of the techniques may have already been learned by your child (if he/she is a current student of Taekwondo) and others will be new.
- After the kata has been demonstrated and taught, your child will be asked to perform the kata by him/herself, which will be scored for accuracy by the researcher.
- If you agree to have your child’s kata performance videotaped, the videotaped performance will be independently scored by the researcher and two other black-belts. If you would rather not have your child videotaped, your child will only be scored by the researcher as your child performs the kata.

Risks or possible discomforts associated with the study: As with any martial art instruction and practice, there are some risks associated with participation in these katas (e.g. pulled muscles,

twisted ankle). However, the risks involved in this research study will not be any greater than those normally experienced in a martial arts training session. There will be little physical contact during the learning of the kata's, and the kata's are at an introductory level. In the event of injury, no compensation will be provided for medical care.

Benefits of Participation: While there are no direct benefits to the participants, we hope this research will provide information that may improve martial arts instruction more generally.

Compensation: If your child completes both sessions (one-hour total), he/she will be eligible for one private class of one hour in length taught by Pearson Klein, a 4th Degree black belt. The free private class will only be available during June/July/August 2010 at a time/date mutually agreeable to the parent and researcher.

Voluntary Participation: Participation in this study is voluntary and your child may discontinue at any time. Their individual results will have no impact on advancement through the Taekwondo curriculum (if participant is a student). Your child will also be asked whether or not he/she wants to participate. Even if you give your consent, your child does not have to participate if he/she chooses not to. We encourage you to discuss the study with your child before making a decision.

Confidentiality: The information gathered from this research will be kept confidential. If you agree to have your child's performance videotaped for scoring purposes, the videotapes will be viewed only by the researcher, or by one of the assistant scorers (Miss Ashley Sierra, 3rd Degree black belt CTF Taekwondo, Mr. Aaron Sierra, 3rd Degree black belt CTF Taekwondo, or Mr. William McMillan, 2nd Degree black belt CTF Taekwondo), either in the setting in which the experiment was conducted (Bob Davis Karate Schools), or the home of the participant should they choose to participate at that location. At the completion of the thesis research, all video tapes will be erased, unless you provide permission for them to be retained for future research. Under no circumstances will the video be used outside of the research context, unless a separate signed media release form is obtained from you.

Who to Contact for Research Related Questions: For questions about the research itself, or to report any adverse effects during or following participation, contact the researcher, Pearson Klein at 956-454-8539, Cowboyhole5208@aol.com or Jim Aldridge at, 956-381-3325, jaldridge@utpa.edu.

Who to Contact Regarding Your Rights as a Participant: If you have any questions about your rights as a participant, or if you feel that your rights as a participant were not adequately met by the researcher, contact the Institutional Review Board for Human Subjects Protection at 956-381-3002. You are also invited to provide anonymous feedback to the IRB by visiting www.utpa.edu/IRBfeedback .

Signatures: By signing below, you indicate that you are voluntarily agreeing your child's participation in this study and that the procedures involved have been described to your satisfaction. The researcher will provide you with a copy of this form for your own reference.

Please check ONE option regarding video recording:

I agree to allow my child to be video recorded during the research session and authorize the researcher to retain the video recordings for use in future research studies.

I agree to allow my child to be video recorded during the research session with the understanding that the video recording will be erased immediately after completion of the thesis.

I do not want my child to be video recorded during the research session.

Child's name (print) _____

Parent/Legal Guardian's name (print) _____

Parent/Legal Guardian signature _____

Date ____/____/____

APPENDIX B

CHILD ASSENT

**The University of Texas-Pan American
Study Title: “Rote versus Context Learning in the Martial
Arts.”**

CHILD ASSENT FORM

- My name is Pearson Klein. I am doing an experiment about how children learn karate the best and would like you to help by participating.
- To participate I would need you to learn 2 new forms of 10 moves each. Each will be taught during a 30 minute period. Then you would need to perform the form for me at the end of the time period.
- You do not have to participate if you do not want too. If you decide not to participate it will not affect your rank or future ranking in the taekwondo system.
- If you decide to participate and finish all the requirements you will be awarded a free private class with me as your instructor.
- Please talk it over with your parents and let them know whether you want to participate.

APPENDIX C
KATA SCORING SHEETS

Kata 1:

Score

YES NO

1. Down block to the left done with left hand

2. Reverse punch right hand

3. Double Knife hand block to the right

4. Right leg side kick

5. Inner block left hand towards front

6. Jump double front snap kick right leg kicking

7. Spinning double forearm block

8. Front leg snap kick (left leg)

9. Spinning x-knife high block

10. Reverse punch right hand

Kata 2:

Score

YES NO

1. High block to the left done with left hand

2. Upset punch right hand

3. Step behind side kick to the right, right foot

4. Land Guarding block

5. X fist low block to the front

6. Reverse crescent kick with right leg

7. Spinning Twin forearm block

8. Inner knife hand right hand

9. Spinning inner block to front

10. Elbow strike left handed

BIOGRAPHICAL SKETCH

Pearson F. Klein currently resides at 400 North Bentsen Road, McAllen Texas 78501. I attended Nikki Rowe High School in McAllen, TX from 1997-2001. I attended Florida State University where I attained a Bachelor of Arts in Communication Studies with a minor in Child Development in 2005. I will earn a Master of Arts in Experimental Psychology from the University of Texas-Pan American in December of 2010.

I have many Athletic Achievements primarily stemming from his martial arts career lasting over 19 years. In 2001 I won: National Champion – Self Defense, at the CTF National tournament, McAllen, Texas 2001, 2001 2nd place National Champion – Breaking, CTF National tournament, McAllen, TX 2001, 2001 2nd place National Champion – Forms, CTF National tournament, McAllen, TX 2001. I competed in tournaments prior but would consider my performance in this tournament to be my greatest and most significant as a martial artist. I also played 4 years of high school football and was a 2 year letterman at Nikki Rowe High School.

I also have many Academic Recognitions: I Attended the National Youth Leadership Forum on Law – 1998 in Washington, D.C. when I was 16. I was voted National Who's Who Among High School Students 2000. I was inducted into Phi Delta Theta National Honor Society in 2002. I also was inducted into Golden Key National Honor Society – University of Texas – Pan American chapter 2009.