

**Pilot Study into the
Psychological Differences
Between Martial Arts**

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A great number of people have helped shape and guide, not only this paper, but also my approach to academic research. While it has not always been easy, it has always been interesting and I am grateful for everyone's participation. My sincere appreciation to Dr. Terry Nosanchuk who acted as advisor on this honours thesis. His patience with a student working full time and studying part time was greatly appreciated. His confidence in my abilities and insistence on challenging assumptions has resulted in a paper quite different from what I envisioned when I started this project - different and much improved. My thanks also to my faculty supervisor, Professor Bill Walther whose approach to teaching and learning has always kept me comfortable. I would also like to acknowledge Professor Jim Campbell and Professor John Partington for their insight into the demands of good research. Finally I would offer a heartfelt thanks to the students and instructors of the three schools who volunteered to be subjects for this research - The White Horses, White Crane Kung Fu Kwoon, Lu's Tae Kwon Do Dojang, and Takahashi's Aikido Dojo.

Research into the martial arts by the social sciences is still a new field with much to be explored. After reviewing the existing literature, it is found that what research has been done has focused on a narrow sample of the wide variety of martial arts available for study. Before such studies can be undertaken, tools must be developed which allow objective, measurable, and repeatable analysis of the different styles by individuals who are relatively uninitiated to the martial arts. This paper proposes such a tool - the Martial Arts Differences Scale.

The Scale is tested for reliability; also, the premise that martial arts styles differ is tested. The Martial Arts Differences Scale proves to have some reliability issues, most of which are identified and remedies suggested. The hypothesis that martial arts differ is supported by the data though caution must be expressed in light of the reliability issues already discussed.

1.1 Research on the Martial Arts in the Social Sciences

1.1.1 A New Field of Study

1 - Introduction and Theory

Given that thirty years ago the practice of martial arts in the Western World was largely unknown, it is not surprising that the Social Sciences have still not tapped into the many opportunities for research offered by this increasingly popular activity. Martial arts practitioners have always claimed that the mental and psychological aspects of their activities differentiated martial arts from other physical activity. The tremendous rise in popularity of martial arts should raise some interest.

Martial arts combines many features that should be of interest to social scientists. Though it could be claimed that any activity which pits individuals against one another in competition¹ taps into aggression on some level, the intuitive connection between martial arts and aggression is evident. Furthermore, many martial arts strongly emphasize the development of discipline, confidence, and perseverance - as well as other traits that have the definite ring of psychology.

Despite this the current research into the martial arts is sparse at best. Part of this lack of research may be due to the difficulties that arise in understanding what may often seem to be very foreign concepts. If we look at the study of martial arts as a new field in the social sciences, then we must acknowledge that this field is in need of its own tools of the trade. If readily usable tools that could help social scientists study martial arts were available perhaps studies on the subject would be more abundant.

The primary goal of this study is to help develop such tools. Martial arts as a group presents a wide variety of theories, activities, schools, and approaches; understanding what these many facets are would be a first step in understanding martial arts. Our research attempts to define these aspects in objective, measurable terms well suited to social science research. These definitions could form the basis for a pencil and paper scale to be administered to martial arts students, or as observational guidelines; this would allow even a relatively untrained observer to make meaningful observations. The author also believes that the variety of martial arts available presents an opportunity to learn more about them by comparing how one style differs from another. Testing the basic assumption that martial arts styles differ will provide an opportunity test this tool in actual research.

1.1.2 What Will Be Examined

Many readers may be strangers to what comprises a martial arts class. Before continuing we should take time to describe what constitutes martial arts study. The following is a very generalized overview; the variety of martial arts styles means that it is difficult to do any more. Most serious martial artists spend between six and fifteen hours in classes as well as devoting time to individual practice. In addition to this many schools advocate incorporating the philosophy of the art into everyday life. It is this point that can help distinguish martial arts practice from any other sport or physical activity - serious martial artists are always practicing their art.

Classes themselves vary as much as the styles themselves. Generally, however, many classes start with some sort opening ritual of respect. This is more common in the traditional styles, but can be

¹ One must note that not all martial arts engage in actual competition - many go so far as to not allow fighting in any form depending on other exercises to teach their techniques.

found everywhere. This ritual often constitutes some form of bowing - either to instructors, senior students, and/or traditional or historical figures. This is often followed by a warm up of some sort. The teaching of martial arts itself can be generalized as consisting of drill, forms, and sparring.

Drill is probably the method best known to western athletes of all kinds. The instructor will demonstrate some technique or series of techniques and students practice it as the instructor observes and corrects. Drill may be performed individually, in pairs, or occasionally in groups.

Forms are a series of pre-determined moves, often against an imaginary attacker, which serve as a catalog of techniques, a safe method of practicing dealing with opponents, and a method of teaching possible combinations. Students spend time learning the complete form, practicing and being corrected by the instructor. Forms are more complex and involved than drill and often serve as a principal tool for practicing on one's own. Some of the more traditional karate schools essentially promote the idea that mastery of all the forms will lead to a mastery of the art². They go so far as to not engage in any sort of sparring or confrontation.

Sparring is probably the activity most people envisage when they think of a martial arts class. Sparring is a controlled, improvisational "fight" between two or more individuals. The term controlled is used because sparring is rarely full contact, and pads are often used. Also, an instructor supervises to insure safety. Some rules are also often in effect, i.e., no hitting below the belt, no choke holds, no strikes with unpadded surfaces, etc., depending on the style. Sparring is termed improvisational to differentiate it from some paired forms and drills where students may appear to be competing but are following through a predetermined series of moves. Finally the word fight was placed in quotation marks to emphasize that, almost universally, the individuals involved do not wish to harm one another, but rather practice their skill in a safe, but nonetheless, unpredictable environment.

Many martial arts classes also include some exercises meant to improve either general physical condition or at least keep the individual in a physical condition more suited to the practice of the art. While much of this comes about as a result of drill and forms, many styles devote some time to exercises designed purely to improve physical conditioning.

Finally, many classes include a meditative component. Most martial arts maintain that the mind is the most important tool of the individual. To this end many engage in activities designed to help strengthen the mind - increase concentration, reduce stress, improve confidence, strengthen resolve. Foremost among these activities is meditation. Care must be taken in considering meditation; there are nearly as many definitions of what constitutes meditation as there are martial art styles.

All of these aspects of martial arts training, and more, will be examined using the Martial Arts Differences Scale. This scale has been designed in two formats. The first, referred to as the "pencil and paper" format, is designed as questionnaire to be handed out and filled in by martial arts practitioners. The second, referred to as the "observer rating" format, constitutes guidelines and instructions for rating the importance of various aspects of martial arts practice by an outside observer i.e., a researcher. The two formats parallel one another - being comprised of the same eight subscales. Further details concerning the scales will be provided in the methodology section of this paper. Copies of both formats can be found in appendix A.

1.2 The Current Status of Martial Arts Research in Psychology

² In Ottawa, one such school is the Gloucester Traditional Karate Association - A Goju-Ryu school.

1.2.1 General Trends

Research into the martial arts by the social sciences is divided along two lines. The biologically focused neuropsychologists approach martial arts as they would any other sport or strenuous physical activity - as an opportunity to study the learning of physical responses and the effects of repeated strenuous activity on the nervous system. Within this context, martial arts offer little to differentiate them from countless other activities and it is unsurprising to find that the literature devoted to the topic is uncommon.

Other social scientists, however, have looked into the martial arts' long standing claims of improving both physical *and* psychological well-being along several dimensions. Although research supports many of these claims, interest in the martial arts, as indicated by the number of articles found dealing with martial arts in psychology journals³, remains limited.

Fuller (1988) suggests that this is due in part to a misrepresentation of the martial arts in popular media. "Kung Fu" and Ninja movies, the Teenage Mutant Ninja Turtles, and the Power Rangers are not images associated with concepts of reduced aggression, inner peace, or enhanced self-concept. Another issue, brought forth by Nosanchuk (1981), is that the traditional claims made by many martial arts schools of reducing aggression go against the accepted theory of habituation, disinhibition, and enhanced skill sets leading to increased aggression (Bandura, 1973). However, as several researchers demonstrate (Nosanehuk, 1981; Nosanchuk and MacNeil, 1989; Skelton et al, 1991) many martial art systems do make good on their claims of reducing aggression.

1.12 Findings of Previous Research

As mentioned earlier, Nosanchuk (1981) indicated that duration of martial arts training was inversely correlated with aggression. The study failed, however, to provide an explanation or mechanism by which aggression is reduced. A later study into the feasibility of using Tae Kwon Do as a form of therapy for juvenile delinquents (Trulson, 1986) confirmed Nosanchuk's findings. Alluded to earlier, Trulson (1986) also found that modern, non-traditional martial arts teaching tended to increase aggression. A later study, Nosanchuk and MacNeil (1988), looked into the possibility of a selection hypothesis. According to the selection hypothesis, individuals high in aggression would be more likely to leave a traditional school or be encouraged to leave by the teacher; as a result, less aggressive individuals, who have stayed with the club longer, would be more likely to be of higher rank. This was not so and the study confirmed the training hypothesis that martial arts practice reduces aggression. Nosanchuk and MacNeil (1989) also confirmed Trulson's finding that non-traditional martial arts training increases aggression.

Skelton, Glynn, and Berta (1991) provide further evidence using the aggression scale of the Revised Child Behaviour Profile of the Child Behaviour Checklist (Achenbach, 1981). This scale is of interest because rather than providing another self report, the subjects, aged six to eleven, were rated on aggression by an adult familiar with the child. Again, length of training correlated negatively with aggression.

³ A psych-lit search for martial arts articles between 1987 and 1994 yielded a list of 44 articles. Seventeen of these were dedicated to neurobiological aspects of psychology and ma. Of the 27 remaining, only 18 were in English.

As was the case with aggression, the findings of several studies relating martial arts and self esteem consistently point to the advantageous nature of martial arts training. Richman and Rehberg (1986) applied the Rosenberg Self Esteem Scale to sixty students at a karate competition in the U.S. The results were correlated with degree of martial arts training by belt. Their results showed that intermediate, advanced, and expert karateka (practitioners of karate) scored higher on self-esteem than novices. It should be noted that no significant differences in self-esteem were found between intermediate, advanced, and expert rankings. This study is also interesting in that the results are compared to and analyzed in the same manner as self esteem measures of other athletes.

Kurian, Caterino, and Kulhavy (1993) compared experience in martial arts with three measures on the 16 PF scale - anxiety, independence, and leadership. Students were arbitrarily assigned novice status if they had less than 1.5 years training and advanced status otherwise. This study is of particular interest as the researchers analyzed the results in terms of the utility of martial arts, specifically Tae Kwon Do, as therapy.

Kurian et al found a significant positive correlation between experience and independence. They also found a significant negative correlation between experience and anxiety. There was no significant correlation between experience and leadership. Kurian et al (1993) conclude that, "Lower scores on Anxiety and higher scores on Independence often accompany improved mental health, suggesting that participation in Tae Kwon Do training may be useful as part of therapeutic programs."(p.365).

It should be noted that Layton (1993) criticized Kurian et al (1993) for arbitrarily setting the difference between novice and advanced students at 1.5 years of training. The authors counter, however, that the division could be seen as valid. Different martial arts have different ranking systems - some schools even forego a belt rank system entirely - therefore, another means of separating students would be useful. It should also be noted that students still with a school after one year have generally incorporated martial arts as a part of their lives, and quitters are usually gone after one year. A period of 1.5 years is long enough that even less dedicated students have adopted a good portion of the cognitions and mind sets encouraged by a school. What follows after 1.5 years is a perfection and refinement of skills, both physical and mental. As Richman and Rehberg (1986) demonstrates, additional splitting into groups may provide no additional significant information.

Madden (1990) looked into attributions of control and vulnerability before and after training in a Karate course. Adding an extra dimension, the researchers took gender into account, administering tests for attribution of control and vulnerability both in general and in specific instances (i.e., physical threat). It was found that even a one-semester course increased feelings of control and decreased feelings of vulnerability significantly. Madden cautions that better results will be obtained when the instructors consider learning and attitude differences between women and men. Madden also points out that while students may have felt less vulnerable, truly effective self-defense would require years of training.

In a brief paper Layton (1990) finds a very strong negative correlation between ranking and anxiety in karateka, consistent with Trulson (1986) and Kurian et al (1993). In closing, Layton argues, "We are in need of longitudinal studies to assess whether training in traditional karate actually lowers anxiety or whether those with the lowest anxiety scores train for the longest period and so were more likely to attain the higher grades." (p.906). This alternate explanation is similar to the

selection hypothesis investigated by Nosanchuk and MacNeil (1989). Although Nosanchuk and MacNeil (1989) find no support for a selection hypothesis, the desirability of longitudinal studies can be seen. That Layton is concerned only with karate illustrates the point made earlier regarding the almost exclusive concern of researchers with karate and Tae Kwon Do. Notwithstanding the limitations of these studies, though, all available data points to martial arts as a potentially valuable therapeutic tool.

1.3 Tying it All Together

1.11 Misunderstanding the Martial Arts

Both Fuller (1988) and Richman and Rehberg (1986) address the issue of inaccurate portrayals of martial arts in the media. Nonetheless, other stereotypes which continue to exist within research by social scientists. The greatest bias in the research is one toward the Japanese influenced martial arts. Of the thirteen sources cited in this paper: nine examined karate (perhaps the best known of the Japanese martial arts) or Tae Kwon Do (a Korean derivative of karate), three focused on Aikido (a Japanese martial arts based on grappling), and one dealt with both Aikido and the Chinese concept of CM. Two of the articles briefly mentioned Tai Chi Chuan (a Chinese internal style), and one mentioned Hapkido (a Korean internal style).

To a certain degree, this bias can be understood - Karate and Tae Kwon Do are, without a doubt, the most popular of the martial arts in the West. Also, the Japanese philosophy is generally less esoteric and more easily converted to a western perspective than the martial arts philosophies of China or the Philippines⁴. However, many martial arts other than karate or Tae Kwon Do are easily found within any reasonably sized city and they offer a perspective that can be quite different from that of the Japanese-based schools. As scientists and individuals interested in the healthful advantages of martial arts, we would be short-changing ourselves if we failed to consider the options and opportunities offered by these other systems.

Furthermore, the psychological effects of martial arts practice are probably best understood through social learning theory (Bandura, 1973). Effects such as reduced aggression in students of more traditional martial arts, as reported by Trulson (1986), Nosanchuk(1981), and especially Nosanchuk and MacNeil (1989), are more easily understood when we consider that more traditional schools actually admonish resorting to violence, emphasize that martial arts are not to be used outside the school except in the most dire circumstances, and generally foster an atmosphere where a peaceful nature is far more respectable than prowess in a brawl.

This emphasis on learning through martial arts is evident even in the claims of martial arts schools themselves which offer to *teach* self-confidence, self-discipline and respect. If we accept this

⁴ Though there are doubtlessly some exceptions to this assertion, this claim is based primarily on the authors own observations. As an example compare the views of conflict and gain presented in Musashi's The Book of Five Rings (from Japan) with Sun Tzu's The Art of War (Chinese). The Rook of Five Rings can be (somewhat facetiously) summed up as "you become successful by being the best. You become the best by being the best". The Art of War, on the other hand is a complex philosophical work that could just as easily have been titled "The Art of Politics". Other examples are found in the complex numerological and geometric basis of Pentjak Silat, an Indonesian martial art, or the complex biorhythms and biomechanics behind Chi'na -joint locks in the Chinese martial arts. The Japanese arts do have some biomechanics and pressure point theory, but they tend to be taught only at high levels and are generally much more simple.

position then it becomes necessary for us to develop a better understanding of just what is being taught and how. The wide variety of martial arts available for study presents us with a unique tool to study this learning. As we shall discuss shortly, martial arts are far from homogenous. These differences extend to the very core of what is taught and how it is taught. This affords us an opportunity, as researchers, to contrast different aspects of martial arts practice to see which bring about what changes.

1.3.2 Understanding the Martial Arts

It could be asked how significant changes can be brought about through an activity that is practised at most for ten hours a week or so⁵. It is important to understand is that, for many students of the martial arts, their practice does not end when they leave class. Attitudes towards themselves and the world as well views of the world are changed and are often actively worked on and analyzed. It is this extra-curricular activity which helps account for the thorough and enduring nature of the changes brought about by martial arts practice. The martial arts concept of energy is one that often finds its way into aspects of the martial artist's life that are removed from the martial arts. While we will concern ourselves only briefly with this concept, it is important that the reader become familiar with the concept of energy if they are to appreciate martial arts as an activity that transcends traditional sports.

The martial arts concept of energy is largely without support from research. Before we dismiss it, however, I would propose that many of the benefits attributed to martial arts may be linked to this concept of energy. Integral to virtually all traditional martial arts is the concept of energy. Whether it is called Ki, Chi, Qi, or any other equivalent, the manipulation of energy, and understanding its place within the body is central to most martial arts. The psychological benefits of martial arts, in the east, are often explained solely in terms of Ki. There is no need to speak of improved confidence and self-esteem or reduced aggression, to say that Ki flow is improved says all this and more.

Research into other forms of energy management has shown the benefits of such exercises as yoga and meditation. Seitz, Olson, Locke, and Quam (1990) propose an interpretation of energy within the martial arts which ties in with available research and goes beyond it. Seitz et al propose that within the energy manipulation found in the martial arts are the tools for managing energy, both intrapersonal and interpersonal, in ways that go beyond the martial arts training-hall. While acknowledging the similarities between martial arts and other sports in their ability to improve mental health, Seitz et al (1990) maintain that martial arts are superior to other sports in their active and conscious manipulation of energy.

Such a proposal agrees with the findings that traditional martial arts training is more beneficial than modern martial arts training (Trulson, 1986 and, to some extent, Nosanchuk and MacNeil, 1989). Such a view is also advocated by Fuller (1988) which has a whole section on "martial arts as psychotherapy". Parallels are drawn between several therapeutic techniques and basic martial arts states of mind. Fuller (1988) goes on to cite Nardi (1981) who:

...examines parallels between Ellis' Rational Emotive Therapy and the samurai code of bushido, and in a later paper considers two specific principles, rinkioben (adaptability) and mushin (no-mind) as they bear on the practice of effective psychotherapy. [p.321]

⁵ This criticism was first brought to the author's attention by Dr. John Partington, of the psychology Department at Carleton University in personal correspondence.

The basic instrument for the manipulation of Ki is meditation. It is through visualization of this energy and its manipulation that the psychological benefits of martial arts are arrived at. In the West, this approach has drawn some attention from individuals interested in alternate forms of therapy. Most of the academic interest in this area has very little research supporting it. While meditation has been studied, the meditative aspect of the martial arts by itself has been largely ignored in research.

Another distinction that arises in the discussion of martial arts is that between internal and external styles. To distinguish between the two we must refer again to the martial arts concept of energy. External styles, as the name implies, work through the manipulation of energies *outside* the body – the emphasis is on how and when to move what part of the body where. The emphasis is not always on strength, but it is on physical attributes such as strength, speed, coordination, flexibility, and technique. In contrast, internal styles work through the manipulation of internal energies, both those of the individual and her opponent. While this is often manifested as throws that redirect an opponent's energy away from its intended target, some internal styles, such as Hsing-I and to a lesser degree T'ai Chi Ch'uan 6, do use strikes.

The internal-external difference should not be confused, as it often is, with the distinction between hard and soft styles. Hard and soft styles can be differentiated along three principal features – attacks, defenses, and resistive methods. Attacks are the techniques used to “neutralize” an opponent. Attacks include strikes – primarily, but not restricted to, punches and kicks – and grappling techniques – which include throws and flips as well as joint locks and various holds. Defensive techniques are used to fend off attacks from opponents. The three more common types of defensive techniques are blocks – straight forward stopping of the attacking move, parries – attempts to deflect an attack away from its intended target, and traps – ensnaring whatever part of the opponent's body is used in the attack to prevent it from succeeding, or even trying again. Resistive techniques are those methods used for dealing with what happens when an opponent's attack gets through a practitioner's defense. Resistive techniques include breakfalls and toughening. Breakfalls are techniques that allow the practitioner to fall or be thrown without suffering injury. Toughening is exactly what it sounds like – training the body to withstand blows and injury. Individuals who practice toughening can often take blows that would easily bruise, and possibly severely injure, an untrained individual without feeling anything.

Hard styles emphasize force on force encounters, active blocking and striking, and are typically linear in their motions; they usually rely more on toughening than breakfalls. Hard martial arts are recognizable by their kicks and punches. Some of the more popular hard arts include karate and Tae Kwon Do.

Soft styles focus more on throws and circular movements. Their defenses rely more on parries and traps; breakfalls are often preferred to toughening. The object is not to stop the opponent's movements with your own, but rather let the opponent's movements work for you. A soft martial art is recognizable by its use of flips, throws and locks. A typical example of a soft art is judo.

2 – Methodology

2.1 Objectives

2.1.1 Where We Want To Get

Accepting that we are at a position, from the point of view of theory, where it would be desirable to engage in a study of different martial arts styles we are left to consider whether we are in a practical position to do so. Sadly, the same facets that make such research desirable also make it presently impractical. The fact that a majority of research into martial arts has focused on one art at a time has meant that no tools have been developed to consistently and objectively differentiate styles. Furthermore, much of the language of martial arts has not been successfully operationalized into concepts that fit well into the lexicon of western psychology. Since many of the existing studies have not looked extensively into the how and why of changes, but mostly into confirming that martial arts practice does bring about change, little attention has been paid to examining just what goes on. Most articles attempting to do so have been of a primarily philosophical nature without any serious attempt at placing martial arts concepts into measurable forms.

Before we immerse ourselves in a myriad of different styles and approaches and corresponding testing measures, it would also be nice to confirm, or at least find support for, the notion that there will be differences between martial arts, both stylistically and in the psychological changes they bring about.

This would ultimately lead, in that ideal world where physics operates without friction and all samples are normally distributed, to an understanding of where martial art styles differ and what the effects of those differences are to the individuals who practice them. We may find that certain martial arts improve self-confidence, whereas others excel at reducing stress. Furthermore, we may be able to isolate some aspect of martial arts practice, such as a focus on meditation, which is conducive to one or more of the changes. With such data, individuals interested in unearthing the how and why of psychological change brought about by martial arts could focus their efforts more effectively, and those individuals interested in the therapeutic aspects of martial arts would also have a repertoire of data to use in their selection.

Another issue that is discussed in Part One, is that of a “selection” hypothesis. Before we can seriously consider the effects of any single martial art, let alone a group of them, we must consider whether martial arts brings about changes in individuals or merely drive away those who do not match the school’s philosophy.

2.1.2 Where We Might Actually Get

Having laid out such an extensive and optimistic wish list, it is now time to realize what can actually be accomplished. It has already been stated that this avenue of research is without the tools it requires to continue. A prime goal of this pilot study, then, is to lay the groundwork for future studies by, at least, starting to operationalized martial arts concepts and developing tools by which they can be analyzed. It would be ideal to have a variety of such measurement tools and understand the strong points of each. This study seeks to produce two such tools based in the same operationalization. The first is a pen and paper assessment that can be completed by the experts themselves – those who practice martial arts. The second is a set of observational guidelines that could ultimately serve to allow a relatively untrained observer to differentiate various martial arts on concrete, readily observable and replicable measures. We shall discuss both formats, the Martial Arts Differences Scale (Pen & Paper and Observer versions) in greater detail shortly.

It would also be desirable to demonstrate that the martial art styles that are different in name are also different in practice. The first test of the Martial Arts Differences Scale would be to help illustrate that there are indeed tangible differences between martial arts. In the previous section we discussed finding similarities as well as differences between arts. At this point it would be unwise to

overload this pilot study with excessive objectives and analyses. In its infancy, time should be allowed for the Martial Arts Differences Scale to prove itself and demonstrate where improvements are needed before undertaking major analytical tasks with it.

Hopefully, having shown that martial art styles do differ it would then fall upon us to find some differences in the psychological changes brought about by martial arts. Ultimately, a broad spectrum of potential changes should be examined; however, at this time we will limit ourselves to a few areas which have traditionally been claimed as relevant by martial artists - self-confidence, self-image, and anxiety as well as aggression which seems to be a favourite among psychologists studying martial arts. It must be emphasized at this point that our analysis will in no way prove, or even support, that any differences that are found are brought about by martial arts practice. Rather, our analysis, if successful, will serve to show that differences do exist between styles and that as such, they merit further investigation.

This brings us to the issue of selectivity - do martial arts actually bring about a change in individuals, or merely collect like-minded individuals into a group waiting for an inquisitive, but methodologically lazy, psychologist to come along. As Layton(1990) points out, a longitudinal study would be the most effective and really the only way to test this hypothesis fully. At this point we must accept that such a longitudinal approach is beyond the scope of this preliminary study or any undergraduate thesis for that matter. Fortunately, several other researchers have addressed the issue of whether martial arts themselves do bring around change. Madden (1990) tested subjects on attribution of control and feelings of vulnerability both before and after a one semester long course and found significant changes to have taken place over that time. Trulson (1986) also used before and after measures to demonstrate a significant decrease in aggression in juvenile delinquents as a result of traditional Tae Kwon Do training and a slight (though not statistically significant) increase in aggression as a result of modern martial arts training without the traditional element. Nosanchuk and MacNeil (1989) focused on the selection versus training issue and were unable to find support for the selection hypothesis, while finding support for the training hypothesis. With these findings in mind it would seem superfluous at this point to incorporate controls for selectivity into this study.

2.2 The Sample

Three schools was deemed a sufficient number to provide the variety of styles required to test the Martial Arts Differences Scale. While in a true experimental design, random selection of schools would have been in order, it was decided for this pilot study to select three schools based on how well they represented the cross section of styles available for study.

2.2.1 The Schools

The first school was a Tae Kwon Do school. Tae Kwon Do is a Korean art generally regarded as being a hard style with a focus on footwork and kicking - especially high, impressive-looking, spinning and jumping kicks. It is generally regarded as a relatively new art - its founder, who developed it as a blend a Shotokan Karate and Tae Kyon, a native Korean martial art, is still alive. It is perhaps the fastest growing martial art, in terms of popularity, in North America. This, combined with its ties to Shotokan Karate made the style a natural candidate for study.

The second school was a White Crane Kung Fu school. Kung Fu, which translates loosely as "hard effort", is a generic term adopted primarily in the west for all Chinese martial arts, so while it is difficult to make generalizations, most Kung Fu styles (and this definitely includes white crane) are

regarded as a blend of hard and soft. Students often begin by learning primarily strikes and blocks, but quickly incorporate traps. As they become more experienced, strikes give way to nerve strikes, which in turn give way to locks and throws.

The third style chosen was Aikido - a soft Japanese style. Aikido was developed as a physical extension of a philosophy of peace and harmony. The focus of the art is very non-aggressive. The author was amused when someone on the receiving end of an Aikido manoeuvre was referred to as a partner rather than an opponent. However, further observation confirmed that not only was this how even a true attacker would be referred to, but that this was but one example of an attitude of cooperation which permeated the entire class.

The actual schools to be studied were picked out of phone book, based on the instructors' willingness to participate (the first Tae Kwon Do school contacted refused), a certain degree of ease of access for the researcher, and alphabetical order. Care was taken not to include any schools with which the researcher was personally familiar.

2.2.2 The Subjects

Permission was obtained from the instructors to observe three to four hours of class time and to approach individual students to recruit them for participation in the research. Instructors were also invited to take part in the individual portion of the research. Observations were made according to the guidelines established in the Martial Arts Differences Scale - observer version. After making all required observations, the researcher was allowed to speak to the class and read the announcement for recruitment. Fifteen students from each class were recruited to fill in the pen and paper version of the Martial Arts Differences Scale as well as four personality scales. As a testament to the busy lifestyle of most martial artists (and perhaps the excessive emphasis placed by the researcher on the voluntary nature of participation in the research), only half of the questionnaires given out were completed (23 of 45 -9 from kung fu, 8 from aikido, and 6 from Tae Kwon Do). In future research, more time will be spent recruiting and interesting instructors in order to have subjects fill out the (shorter) questionnaire in class.

2.3 The Scales Administered

2.3.1 The Martial Arts Differences Scale

As discussed in the objectives, the development of this scale was actually one of the objectives of this study. It was felt that to achieve scientifically credible results in the area of differences between martial arts, some sort of objective, repeatable measuring tool would have to be available. The Martial Arts Differences Scale is our first attempt at developing such a tool (See Appendix A for details on each scale).

The Martial Arts Differences Scale is made up of eight subscales based on a combination of how martial arts have been studied in the social sciences to date, research into how martial artists have traditionally defined and delineated themselves, and the researcher's own experiences in the martial arts and in discussing the issue with other martial artists. Amidst all of this, the guideposts were observability and replicability. The sub-scales were designed so that an observer uninitiated in the martial arts could make valuable and useful observation with a minimum of training.

2.3.1.1 Tradition

The first subscale is the importance of tradition. Many studies have used the designation traditional versus non-traditional as a tool in studying aggression. Furthermore, martial artists themselves use the same terms in discussing their art in relation to others. What, however, makes one art more traditional than another? While many would argue that tradition is an intangible quality, it was found that the more traditional schools were also observably different. Six observable facets linked to tradition were found and used to help determine the importance of tradition to the style as taught at the school where testing took place. It is difficult to predict which schools would score highest in this. However, given the findings of previous research, we might expect schools scoring high on this subscale to foster less aggressive behaviour. As alluded to earlier, this can be explained by social learning theory. Generally, tradition in martial arts serves to teach the practitioner humility and respect and to avoid use of one's skills as anything but a last resort.

2.3.1.2 Hard vs. soft

The hard vs. soft distinction is probably the best known to martial artist and those who study martial arts. Differentiating between hard and soft was assisted by examining the three principal areas where hard and soft can be distinguished - offensive, defensive, and resistive techniques. Soft arts are more focused on throwing and grappling attacks, trapping defenses, and breakfall resistive techniques. Hard martial arts, on the other hand, would focus more on strikes for attacking techniques, blocks for defensive purposes, and resistive techniques based on toughening. By breaking it down thus, incidences of each facet could be counted in patterns, drill, and sparring exercises. Within our sample, we could expect the Tae Kwon Do school to rate lowest (most hard) in this subscale and Aikido to rate highest (most soft). We may also propose that the softer styles might be less prone to aggression. The throwing and grappling techniques of the softer styles are better suited to counter attack and responding to offensive action than initiating aggression.

2.3.12 Internal vs. external

The internal vs. external breakdown has already been touched on in the theory portion of this paper. Generally, internal arts work with the manipulation of energy, whereas external arts focus on more tangible concepts of speed and force. Again, to aid the distinction, this division was broken down into instances of both. By counting instances of internal techniques or explanations and comparing this count to that for external, a relative rating could be obtained. It is difficult to determine what types of styles will rate highest (most internal). From personal experience, the author would venture that both the Kung Fu school and the Aikido school would score higher than the Tae Kwon Do school. On the theoretical side, one might expect more internal schools to foster reduced stress. Many internal styles introduce an almost meditative quality into all of their exercises. Benson (1975) and Shapiro (1985) have demonstrated the success of meditation in reducing stress. If internal schools do practice a sort of "moving meditation", then we can see how practice of such styles would lead to reduced stress.

2.3.1.4 Sparring

The importance of sparring to a martial art was of particular interest to this study in light of the learning theory approach taken. An aggressive focus on sparring, with emphasis on winning or defeating ones opponent could be seen as modelling pro-aggressive behaviors and attitudes. On the other hand, an avoidance of sparring, or an emphasis on safety and respect for one's sparring partner and on the cooperative nature of two individuals teaching each other in a non-structured environment, could foster improved control over aggressive tendencies or possibly allow some sort of "playing out" in a safe, controlled atmosphere.

The importance and degree of sparring was measured by counting the time spent in sparring and/or preparation for sparring as well as the type of sparring - slow, controlled vs. full-contact, and the use of pads. Because of the tiring nature of sparring, actual sparring time was weighted quite heavily. Those schools with a strong competitive element i.e., Karate and The Kwon Do would probably score highest in this category. Also, those schools which stress the “martial” in martial art would score high on this subscale. Some kung fu schools fit into this category, as well as many of the more non-traditional schools such as North American kickboxing.

Two primary effects of sparring on the individual are proposed. It is possible that sparring, especially in schools where it is less well supervised, will increase aggression by improving an individual’s skills for aggression and, within competition, teaching that aggression can be rewarding. On the flip side however, the author has noticed that martial artists practicing a style which includes sparring tend to be more confident of their ability to handle unpredictable circumstances both within the domain of martial arts and outside it. It is possible that the improvisational format of sparring fosters the ability to deal quickly with new and unpredictable situations. In turn this could lead to improved confidence and a greater sense of control.

2.3.1.5 Forms

Virtually all martial arts include some sort of concept of forms. Referred to as Kata in the Japanese arts, patterns in Tae Kwon Do, and Tan (Mandarin) in Kung Fu, forms are a series of predetermined moves either with a partner or against an imaginary opponent which help teach the practitioners moves and responses to attacks. Forms serve as a teaching device, a catalog of moves, and for demonstration and competition. Though it is not always the case, styles which avoid sparring often favour the use of forms heavily. Time spent in the practice and teaching of forms, as well as the importance of forms in a demonstration or competition context was used as the criteria for scoring. Much like the element of tradition it is difficult to predict what styles will tend to use forms most. Though given that forms often act as a substitute for sparring, it is possible that schools ranking lower in sparring will rank higher in use of forms.

2.3.1.6 Calisthenics

Because martial arts are perceived as a sport and their benefits to physical health are often highlighted, it was decided to include the importance of calisthenics into the Martial Arts Differences Scale. This was measured by tracking the amount of time devoted to exercises devoted solely to improving physical fitness, and tracking the importance placed on physical fitness by the instructor. This isolated emphasis on the well-being of the physical self is a primarily western concept. Therefore, if we were to speculate, we would propose that the more mainstream styles would tend to place more emphasis on this aspect of martial arts training.

2.3.1.7 Drill

Along with forms, drill is the other principal teaching instrument of most martial arts. Drill consists of a much shorter series of moves, or a single move, repeated often. Again, time spent in drill was the primary determinant of the score in this subscale. Also a factor was the degree to which the style depends on drill to develop a “complete” mastery of the style. As with forms, it is difficult to predict what styles will rank highest in this subscale.

2.3.1.8 Meditation

The final subscale was probably the most difficult to measure. Because meditation has so many interpretations in different milieus, it was difficult to define it in readily observable and generally acceptable terms. Yet, because meditation can be such an important part of many martial arts classes, it was felt that some sort of measure had to be included. In order to facilitate observation, meditation was defined as “active relaxation involving no motion”. Although it is understood that many would consider “active relaxation” an oxymoron, the point was to get across the idea of the primary goal (or non-goal for those readers with a bent for eastern philosophy) of the activity being relaxation. The “motion clause” was again included to facilitate observation. Many practitioners regard all practice of Aikido or T'ai chi to be a sort of moving meditation and Yoga involves many forms which include motion; however, to the untrained eye, it would be difficult to differentiate moving meditation from a form. As discussed in section 2.3.1.3, meditation will likely play a role in reducing stress. However, because of the strict definition we have imposed on meditation, it is possible that what is commonly perceived as a meditative art will actually score lower.

Together, these eight subscales represent a majority of the observable features which distinguish styles as a whole. There may be other factors, such as social context, which vary from club to club rather than style to style; but these are out of the scope of this study. Rating along these eight dimensions is (theoretically) identical on the pencil and paper format and the observer rating format.

2.3.2 The Psychological Scales

As discussed in the objectives portion of this paper, it was desired to apply a variety of psychological scales to the subjects in order to get a broad picture of any potential differences that might exist. Four areas were targeted for measurement - aggression, control constructs, self-esteem, and social anxiety. The tests were selected for ease of administration - all subjects were volunteers without even the incentive of a psychology 100 credit to encourage them. As the number of completed questionnaires returned indicates, even what the questionnaires which the author considered short and simple often proved too long.

For the aggression measurements a portion of the Buss-Durkee Aggression Inventory (Buss, 1961) was used. The sub-scales for assault, indirect aggression and negativism were selected. The inventory consists of a number of true or false questions. The sub-scales allow for a more detailed breakdown of aggression and the true or false format makes administering the test quite simple. Given the apparent conflict driven nature of martial arts and the interest in the link between martial arts and aggression in the existing literature, it seemed only natural to include this element in our study.

Control constructs were measured using Levenson's Internality, Powerful Others, and Chance scales (Levenson, 1981). The three separate components of this control construct again provided more detail than some of the more traditional locus of control measures. The assessment consists of eight questions for each component with responses rating from -3 to +3. This element ties into claims made martial arts schools of improving an individual's feelings of control. As well, this construct has been investigated before by Madden (1990).

Social anxiety was measured using the Interaction Anxiousness Scale (Leary, 1983). The scale consists of fifteen questions rated from one to five with higher scores indicating a greater degree of

social anxiety. The final scale was the Rosenberg Self-esteem scale (Rosenberg, 1965). The scale consists of ten items rated from one to four, with higher scores indicating a greater degree of self-esteem. These scales were chosen to tap into concepts of confidence and feelings of self-worth.

233 The Analysis

The first goal of this research was to develop a reliable analysis tool for assessing differences between martial arts. The first analysis performed consisted of examining the reliability of the Martial Arts Differences Scale. This was achieved by comparing the results of the observer format of the Martial Arts Differences Scale with those of the pencil and paper format. Given the small sample size, it was felt that advanced statistical analysis would be inappropriate. Means and standard deviation were calculated and compared on all eight sub-scales for each of the three styles examined. Scores which varied by more than one standard deviation were considered notable.

The scores from the pen and paper assessment were used for all subsequent analyses as their greater sample size promised more reliable results. The next analysis consisted of comparing the three arts on each of the eight subscales of the Martial Arts Differences Scale. Again means and standard deviation were calculated and compared to the three groups. Scores which were higher or lower by one standard deviation or more were considered to be of interest. The final analysis consisted of comparing the results of the psychological tests in a manner similar to that used for the second analysis.

3.1 The Data by Scale

The results of the analyses are presented on the tables on the following page. Table I presents the results of the reliability testing of the Martial Arts Differences Scale. Table 2 presents the comparison of the three styles by the Martial Arts Differences Scale, and Table 3 presents the results of the psychological scales.

3.1 The Data by School

3.1.1 The Kung Fu School

The Kung Fu school was the most consistent under the reliability testing portion of our research.

The pencil and paper format results differed from the observer format only on the sparring subscale - with the pencil and paper format having a much higher score.

The Kung Fu school differentiated itself least on the Martial Arts Differences Scale, with its only significantly different score being in sparring with a mean score of 3.22 compared to an overall mean of 2.98 with a standard deviation of .21. All other scores on the Martial Arts Differences Scale were well within the overall mean.

This style also differentiated itself least on the psychological measures. Students from this style did, however, score considerably higher on the assault subscale of the aggression measure -students

from the Kung Fu school averaged a score of 5.11 compared to an overall mean of 3.73 and a standard deviation of 1.21. It may be worth noting that this gap between the school's average and the overall mean was the widest of all the differences in this portion of the research.

3 - The Results

3.1.2 The Tae Kwon Do School

The Tae Kwon Do school was the least consistent school in the reliability portion of this study. Notable differences between the two formats of the Martial Arts Differences Scale were found on three subscales - importance of tradition, external vs. internal, and practice of calisthenics. In all three cases, the students ranked their style higher than did the observer.

Based on the responses on the pencil and paper format of the Martial Arts Differences Scale, the Tae Kwon Do school could be set apart from the two other styles being studied on three subscales. Practitioners rated the importance of tradition higher than the other two schools. The responses given on the Martial Arts Differences Scale also indicate that Tae Kwon Do was the hardest of the three styles studied. Finally, participants rated the importance of calisthenics higher than the other two schools.

On the psychological scales, Tae Kwon Do was also differentiated on four scales. Responses were notable higher on the aggression subscale of the aggression measures - an average of 4.83 versus an overall mean of 4.48 with a standard deviation of .32. Practitioners of Tae Kwon Do also rated highest on the internal attribution of control subscale - scoring an average of 41.33 as compared to an overall mean of 37.19 with a standard deviation of 3.76. The Tae Kwon Do students also attributed the least importance to chance control of events - averaging 11.17 in comparison to the overall mean of 14.91 with a standard deviation of 3.26. Participants from this style also scored highest on the self esteem scale - a mean of 35.00 as compared to the overall mean of 33.20 with a standard deviation of 1.75.

3.1.3 The Aikido School

In the reliability testing portion of the study, the Aikido school was found to be inconsistent on two subscales. The pencil and paper rating on the importance of forms was higher than that obtained by the observer. Also, the observer rating on the importance of drill was higher than that of the pencil and paper format.

The Aikido school differentiated itself most on the Martial Arts Differences Scale, with four notably different scores. The Aikido school was found to be the most internal with an average of 4.05 as compared to an overall mean of 3.77 with a standard deviation of .27. Respondents from this style also rated the importance of forms lowest, with a mean of 3.19. The overall average on this subscale was 3.94; the standard deviation was .70. Drill was also rated least important. Compared to the overall average of 3.71, with the standard deviation being .14, on this subscale, the respondent from the Aikido school averaged 3.56. Finally, scores on the meditation subscale were also lowest at an average of 1.54. This can be compared to the overall average of 2.12, with the standard deviation being .50.

Practitioners of Aikido could be differentiated from participants from the other two styles on three of the psychological scales. Perhaps the most notable of these, in light of higher scores by the two other schools on other aggression subscales, is the low score on the negativism subscale of the

aggression measure. The mean for participants from the Aikido school was 1.50, as compared to an overall average of 2.19 with a standard deviation of .67. The Aikidoists also rated highest on the attribution of control to powerful others - with a mean score of 17.13 compared to an overall mean of 14.10 with a standard deviation of 2.62. The practitioners of Aikido also scored highest on the social anxiety scale - a mean of 38.38 to the overall mean of 33.24 with a standard deviation of 4.65.

4.1 The Martial Arts Differences Scale

As discussed in section 3 only one subscale was without inconsistency. However, a majority of these inconsistencies can be explained and steps taken to improve results next time.

4.1.1 Tradition

The pencil and paper format scores for the Tae Kwon Do school were higher than the observer format. This may be due in large part to what the author has termed the “indoctrination factor”. An aspect of tradition which was left out of the Martial Arts Differences Scale, the indoctrination factor reflects not any particular tradition of the observances paid to it, but rather it reflects the importance placed on tradition as tradition by the style. The Tae Kwon Do school has students actively repeat the tenets of Tae Kwon Do as laid out by its founder (akin to American’s swearing allegiance to the flag). While this was not recognized as having any great significance during observation, we can see how it would result in students’ placing a great deal of importance in tradition when responding to a questionnaire. A revision of the Martial Arts Differences Scale would have to include guidelines for accounting for this.

4.1.2 Hard vs. Soft

The hard vs. soft subscale was the only one to remain consistent across all three schools. A large part of this may be attributed to the fact that most martial artists are familiar with this term and can readily place their art along the continuum from hard to soft. As well, the differences between hard or soft were clearly defined, and concrete examples for each extreme were provided, as well as guidelines for judging how far to place a style along a continuum. For example, without guidelines, an individual may rate their styles use of strikes as a four on importance while an observer might rate it a five. However, when we clearly define strikes as opposed to throws and then suggest that a rating of five corresponds to 90% or more of attacks constitute strikes, while 75-90% strikes rates a four, we improve our chances of agreement significantly.

4.1.3 External vs. Internal

For all the success we had in defining the differences between hard and soft styles, we had trouble with the distinction between external and internal. Part of the problem lay in the unclear distinction in the popular literature, and many people’s minds, between the hard/soft division and that between internal and external. One definite change would be to clearly and thoroughly define all terms before the questionnaire was filled in. Also, in order to have a readily observable measure we infer the level of internality/externality through other measures such as emphasis on speed, strength, balance, etc.. We also encountered the problem on the questionnaire of individuals allocating great importance to everything. It might prove worthwhile to have participants rank the importance of the various factors (i.e., only one of speed, strength, balance, etc. could be rated most important, one second most, third, etc.).

4.1.4 Sparring

The disparity between the scores on the pencil and paper format and the observer rating format for the Kung Fu school in sparring emphasize the incomplete nature of the observer rating format. Unless the researcher is prepared to spend months observing and rating and attending all aspects of school activity, the observation must be supplemented by interviews with instructors and, possibly, senior students. In this case, sparring was only practised every other week by senior and intermediate students only. Since the observer missed these classes, an essential aspect of the style was overlooked. A similar situation exists in the use of forms and tradition. The status of forms in competition or the importance of tradition in advancement is difficult to assess without resorting to interviews. Subsequent versions of the observer rating format of the Martial Arts Differences Scale will include an outline to guide interviews following observation.

4.1.5 Forms and Drill

Though these consist of two different subscales on the Martial Arts Differences Scale, the trouble with them lies in distinguishing between the two in observation. A short form may be difficult to distinguish from an extended drill. Two options present themselves at this point. The first is to arbitrarily assign a limit as to how many moves can make up a drill, and how few techniques still constitute a form. This however would still be difficult for the uninitiated observer. The second would be to note questionable instances and discuss them with the instructor in the ensuing interview.

4.1.6 Calisthenics

This is the only subscale where the inconsistency is apparently inexplicable. Though we do not want to invoke the excuse of insufficient sample size needlessly, this may be the case. The inconsistency appears in the Tae Kwon Do measurements, where we had only six respondents. Unless we get such an error again, we are forced at this time to leave the matter be.

Given the concerns we had with meditation, it is pleasant to see only one inconsistency in the comparison. This discrepancy was explained when the observer spoke with the instructor after class. Meditation is considered advanced material of study within this Kung Fu style and the beginning students are not exposed to it. This would have brought down the Pencil and Paper format scores, while the observer, who had seen an advanced class, would attribute a greater importance to meditation. Again, this is an instance where a follow-up interview with the instructor can provide more than can be obtained solely through observation.

4.2 Comparison of Martial Arts Differences Scale Scores Between Styles

The most important notes on these scores is to be aware that the value of some of this data is reduced by the lack of agreement between observer ratings and the pen and paper ratings on the Martial Arts Differences Scale. With this caution in mind, however, the results on this portion of the analysis were encouraging. Several differences were found between the styles. In general the finding that there are differences serves more to confirm our initial assumptions than to provide any great insight. As a matter of fact, we might look at some of the similarities as further evidence that some of the Martial Arts Differences Scale subscales do need further improvement.

Generally, the differences found in this comparison agreed with the predictions made in section 2. The only two surprises were the high ranking of Tae Kwon Do on the tradition subscale and the low

position of Aikido on the meditation subscale. The cause of Tae Kwon Do's high ranking on the tradition subscale has already been discussed in section 4.1. Similarly, it was predicted in section 2 that some styles usually perceived as being meditative might rate less so without strict definition of meditation.

Upon examining the results and comparing informal notes taken by the observer, we must also realize that all of the schools selected would probably have fit under the general heading of traditional school under a less rigorous delineation system. As such it may be interesting to include a more "modern" school such as sport karate or North American kickboxing in future research. This omission may explain the lack of variety in the forms and drill subscales especially.

4.3 Results on the Psychology Scales

Here, perhaps, were the most disappointing results of the research. Without trying to make excuses, one must wonder if a larger sample might not have provided more interesting results. Also, a broader battery of tests may have found differences in other areas. As indicated in the methodology, it was acknowledged from the start that even significant findings in this domain would have left much to be investigated still as controls for selection effects were not in place.

Nevertheless, some interesting trends did appear. Aikido, the soft style, can be considered to have ranked lowest on the overall aggression scale - it was significantly lower on one subscale and both the other styles ranked significantly high on one subscale or the other. Also, individuals from harder and more sparring intense styles did score higher on internal control and self esteem. It is also interesting to note that the "in between" style - Kung Fu, a combination of hard and soft styles, had the fewest extreme scores.

4.4 The null hypothesis

Of course, despite all the reasons presented as to why the results we have obtained could have turned out otherwise, we must also consider the possibility of some form of the null hypothesis being true. It may well be that the differences between martial arts are minor when compared to the similarities. Were this to be the case, this research would still not be a loss. The analytical tools we are developing here could also serve to search for commonalities among martial arts; allowing to determine, as was our original goal, just what part of martial arts practice results in psychological change.

Again, it must be emphasized that the sample size and the lack of controls we were working with in this initial study do not warrant such a drastic conclusion yet. We must merely continue to keep this option in mind. Also, as we have mentioned previously, all three schools are quite traditional in nature. Perhaps, if a more non-traditional school had been included in the sample more variety would be seen in the results.

Another aspect of the data which was available, but not examined for lack of a complete sample with which to work was the duration of time with a system. Working within a learning framework, it might be reasonable to assume the students who have been with a school longer have had more exposure to the teaching elements of the style and may exhibit more profound changes. Also, they would tend to better understand the art in its entirety. Based on these presuppositions, senior or more advanced students might prove to have more internally consistent data, exhibiting greater diversity between schools. Unfortunately, with samples as small as 6, dividing the styles along

seniority as well would have made any findings meaningless.

The great footnote on all of our discussion would appear to be completeness of data - both in level of detail and in sample size. It would be recommended for future studies that subject schools be recruited to take a more active part. The best results in terms of participation were obtained from the Kung Fu school where the instructor showed an active interest in the project, gave the researcher some class time in which to speak and allotted class time for those who volunteered to fill out the questionnaire. With such active participation, complex definitions could also be further illuminated, and some form of interviews could also be used to supplement observational data. With such support from the schools themselves, some sort of longitudinal studies might also become feasible. New students could be referred to the researchers for recruitment, and before and after measures could be collected; data on quitters and transfers could also be gathered; students transferring between styles could be interviewed for more in depth views on differences as well as for the cause of the transfer and the perceived effects of the transfer.

It has also been demonstrated that alternate hypotheses cannot be ruled out. Future research should incorporate some of these alternatives into the research. A failure to find a difference needn't be seen as a failure; rather, it can be seen as a success in finding commonality. Regardless of which direction we search in, a tool which allows the researcher to dissect the martial art styles will prove invaluable.

5 - Conclusions

As a preliminary foray into the domain of differences between martial arts, this research has proved fruitful. We are left, as it were, with more questions than when we started, but many of these questions are now more directed. This research would have been considered a failure had we found no questions to ask.

At the same time we cannot consider it an unqualified success. The Martial Arts Differences Scale obviously requires much work still, which means that, in all likelihood, any future research will have to contend with testing out the validity of the data revealed by the Martial Arts Differences Scale. Furthermore, one is still left to wonder whether time might be better spent pursuing differences or similarities between the styles.

Perhaps our greatest success lay not in having discovered what we do or do not know, but in learning more about what doesn't work and what seems as if it will work. Perhaps somewhat of a novice, the author considers this to be a reasonable accomplishment for a first piece of pilot research. Although we are left with several "what ifs", we do have directions and methodological directions to pursuing these hypothetical eases. The concept of operationalizing martial arts terminology and concepts into readily observable facets appears to be a workable one. One which we have succeeded in establishing some ground rules:

- tight and very clear definitions of concepts yield cleaner results. Although they may lose some of the original intent of the concept. It is preferable to have a clear picture and know what we are looking at, than have an fuzzy picture of an unclear concept. Refinements to definitions can also be worked on as we gain a better understanding of a concept;
- concrete observational signposts, such as time spent at an activity or instances of certain actions produce more meaningful observational results;
- supplementing observations with interviews, would allow external scoring of the Martial Arts Differences Scale to include features which would possibly require years of intense

observation;

- providing concrete examples within definitions reduces variance within scores.

Should these steps be taken and additional research be undertaken, further confirmation may be found for some of our tentative observations on the differences between styles. Accepting that we have a small sample, there is nevertheless encouraging evidence that there are indeed some differences between the styles. We must emphasize at this point that these differences might have been even more evident had not all three styles chosen for study been from the group of martial arts generally considered as traditional. Despite this, we may have observed some differences in aggression, confidence, and attribution of control between the two most different styles - Tae Kwon Do and Aikido.

This paper can be concluded by stating that our research has indicated the feasibility and desirability of differentiating martial arts styles. A framework has been presented and tested. With some improvements, many already discussed here, the next piece of research on this topic may well report more significant findings.

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Appendix A

Martial Arts Differences Scale (Self Report Version)

This questionnaire attempts to differentiate your martial art style from others along 8 dimensions which are often used to discuss martial arts. Because the definition of these eight dimensions can be rather hazy at times, each has been identified by certain key identifying features. Please read each point over carefully, and assign a rating from “1” to “5” to each point according to the guidelines provided for that dimension.

A. Tradition: To what extent is tradition, as defined by your martial art, important to your martial arts style. With “1” being unimportant and “5” being very important, please rate the following points:

1. Use of language of origin: are words from the language spoken where the art was developed used (i.e., to describe moves, give directions, as a sign of respect, to count out drills, etc.)
2. rituals of respect: (i.e., bowing, ritual phrase, seating arrangement, etc.) How many rituals are there and how often are they performed.
3. historical context explained Do the instructors take time to explain where exercise comes from, how it developed, where it was developed, how it has changed, etc.
4. knowledge of history of the art encouraged/required For example: Are students quizzed on the history of the art? Is the history of the art presented? Is knowledge of this history made a requirement for progression (officially or not)? Are students praised for their knowledge of the art’s history?
5. awareness of “founding individuals”: Are pictures and/or icons present? Are certain names mentioned in rituals, are certain moves, locations or exercises named after individuals, are stories involving founders told?
6. uniform: Is there one? How “uniform” is it, how important is it, does it signify anything?

Hard/Soft: Hard martial arts are generally typified as being more concerned with strikes and blocks while soft martial arts are characterized by throws and holds. Is your art more soft or hard? One being exclusively hard and 5 being exclusively soft. Please rate the following points:

Techniques used are primarily

1. throws(soft) vs. strikes(hard)
2. traps(soft) vs. blocks(hard)
3. break falls (soft) vs. toughening (hard)

Internal/External: Internal arts are more concerned with the manipulation of energies within the body; external arts emphasize physical conditioning, speed, position, and technique. Is your martial art style best characterized as an external or an internal style? Please rate the following points:

1. How important are each of the following:(With 1 being unimportant and 5 being very important)
Speed (ext) _____

Strength (ext) _____
 Timing (int) _____
 Balance (int) _____
 Positioning (int) _____
 Effective Biomechanics (int) _____
 Deception (ext) _____

2. To what degree are techniques described as manipulation of energies(with 1 being not at all and 5 being exclusively)?

Sparring: Is sparring important to the practice of your martial art? With one being none or not at all and five being very much or a lot. Please rate the following points:

1. How much time is spent discussing/practicing free form fighting techniques and/or sparring _____
2. Degree of sparring: How often are each of the following used when practicing sparring:
 slow sparring non-contact sparring light contact sparring
 full contact sparring pads

Forms: Called kata in the Japanese martial arts, forms are set series of moves responding to an imaginary or predetermined attack. How important are forms to your martial arts style? With one being unimportant and five being very important Please rate the following points:

1. How much time is spent practicing forms or perfecting segments of a form or developing applications from forms. _____
2. Importance of forms in a competitive context How important is the performance of forms aspect of competitions?

Calisthenics Are exercises designed to improve strength, endurance, and flexibility important to martial arts as practiced by your style? With one being unimportant and five being very important. Please rate the following points:

1. Is there an emphasis placed on physical fitness by the instructor.
 2. Is class time spent in physical exercises not designed to improve any given technique or meditation or knowledge, but simply improve physical condition.
2. Are students given encouragement to pursue a program of physical fitness outside of class

Drill: Is drill, the repetition of basic moves and techniques, important to your style's practice of martial arts? With one being unimportant and five being very important. Please rate the following points:

1. Time spent in repetitive practice of individual moves _____
2. Is drill viewed as important to some other level of practice or is it seen as leading directly to martial arts expertise(i.e., can drill alone make you a proficient martial artist)?

Meditation: Is meditation as defined below, important to the practice of your style? With one being unimportant and five being very important. Please rate the following:

Meditation for purposes of this study can be regarded as active relaxation involving no motion (i.e., many forms of Yoga would not qualify as meditation under this and while many consider T'ai Chi to have a meditative nature, it would not qualify as meditation). Generally meditation involves - relaxation of muscles, awareness of body and process, reduction in the "immediacy" of self and/or body, harnessing of internal energies. This is very vague and sketchy, but I'm trying to allow for the variety of interpretation on meditation to be found within the various traditions of martial arts practice.

Martial Arts Differentiation Scale
(Observer Report Version)

Tradition:

Use of language of origin

How many times are words from the language spoken where the art was developed used (count)

- 1 - Never
- 2 - 1 to 3 times

3-3 to 10 time
4-11 to 20

- 5- more than twenty

rituals of respect

i.e., bowing, ritual phrase, seating arrangement, etc. how many rituals are there and how often are they performed

- 1 - none, never
- 2 - 1 or 2, less than once a class
- 3 - 1 or 2, once or twice a class each
- 4 - 1 or 2 repeated 4 - 10 times or several done once or twice each
- 5 - 1 or 2 repeated several time (before each exercise) or a series which are seen 4 - 10 time each

historical context explained

Instructors take time to explain where exercise comes from, how it developed, where it was developed, how its changed, etc.

- 1 - never
- 2 - observed to do so once
- 3 - less than once a class
- 4 - 1 to 3 times a class
- 5 - 4+ times a class

knowledge of history of art encouraged/required

students quizzed on history, history is presented, knowledge of history made a requirement of progression (if this was the only example observed it would rate around three), students praised for knowledge of history

- 1 - never
- 2 - observed once
- 3 - less than once a class
- 4 - 1 to 3 times a class
- 5 - 4+ times a class

awareness of “founding individuals”

presence of pictures and/or icons, names mentioned in rituals, moves, locations or exercises named after individuals, stories involving founder told

- 1 - no acknowledgement made at all
- 2 - one incidence of acknowledgement
- 3 - one permanent incident or one recognition per class
- 4- permanent incidents and active recognition
- 5 - permanent incidents and several instances of active recognition

uniform

Is there one? How “uniform” is it, how important is it, does it signify anything

- 1 - no uniform at all
- 2- uniform available but not required - no meaning attached
- 3 - uniform encouraged - meaning known
- 4 - uniform required - meaning made evident
- 5 - uniform required - meaning made evident - respect given to uniform

Hard vs. Soft Styles:

Time spent learning

use a stopwatch and time exercises

strikes vs. throws: of the offensive moves taught

- 1 - 100 % strikes/0% throws
- 2 - at least 75% strikes/no more than 25% throws
- 3 - approx. 50% strikes/50% throws
- 4- no more than 25% strikes/at least 75% throws
- 5 -0% strikes/100% throws

traps vs. blocks: of the defense against strikes taught

- 1 - at least 80% blocks and no traps
- 2- blocks outnumber parries outnumber traps
- 3 - blocks traps, parries don't count as either
- 4- traps outnumber parries outnumber blocks
- 5 - at least 80% traps and parries outnumber blocks

break falls vs. toughening: of these “last line of protection” which are taught/encouraged 1 - toughening exclusively

- 2- toughening practised, breakfalls alluded to but never really practised
- 3 - toughening and breakfalls discussed and practised
- 4 - breakfalls taught and practised, toughening alluded to but not actively pursued
- 5 - breakfalls exclusively

Internal vs. External Style:

What counts most in effective use of techniques?

count incidences: what is explained as goal of exercises, what is

emphasized in succeeding at moves.

Speed (ext)
Strength (ext)
Timing (int)
Balance (int)
Positioning (int)
Effective Biomechanics (int)
Deception (ext)

1 - 90%+ of count for external
2 - 70%+ of count for external
3 - approx 50% of count both ways
4 - 30% or less of count for external
5 - 10% or less of count for external

To what degree are techniques described as manipulation of energies count: how often is the manipulation of energy discussed

1 - never
2 - less than once a class
3 - 1 to 2 times a class
4 - 3 to 5 times a class
5 - 9+ times a class

Sparring:

Time spent discussing/practicing free form fighting techniques and time spent sparring (multiply sparring time by 2)

1 - none
2 - less than five minutes a class
3 - less than 20% of class time
4 - less than 50% of class time
5 - more than 50% of class time

degree of sparring

i.e., slow, non-contact, light contact, full contact, use of pads

1 - none, slow with pads
2 - slow or non-contact with pads
3 - non-contact or light contact with pads
4 - light contact no pads or full contact with pads
5 - full contact no pads

Forms:

Time spent practicing forms or perfecting segment of form or developing applications stopwatch

- 1 - none
- 2 - less than five minutes a class
- 3 - less than 20% of class time
- 4 - less than 50% of class time
- 5 - more than 50% of class time

Importance of forms in competitive context

Is there a forms performance aspect to their competitions

- 1 - no forms
- 2 - forms for demonstration only, no actual prizes
- 3 - forms for tests and demonstration but not competition
- 4 - forms competition do take place
- 5 - competition in forms only - no sparring

Calisthenics:

Spoken emphasis on physical fitness

Physical fitness includes, but not limited to, endurance, strength, flexibility, resilience

- 1 - none
- 2 - once a class
- 3 - 2 to 3 times a class
- 4 - several times a class
- 5 - physical component of virtually every exercise emphasized

class time spent in physical exercise

exercises not designed to improve any given technique or meditation or knowledge, but improve physical condition.

- 1 - none
- 2 - one or two exercises for less than five minutes
- 3 - 10 to 15 minutes
- 4 - less than 50% of class time
- 5 - more than 50% of class time

encouragement given to pursue program of physical fitness outside of class

- 1 - none
- 2 - heard once, but not in general announcement
- 3 - general announcement less than once a class
- 4 - general announcement once a class or several individual encouragements
- 5 - several times a class

Time spent in repetitive practice of individual moves
stopwatch

- 1 - none
- 2 - less than five minutes a class
- 3 - less than 20% of class time
- 4 - less than 50% of class time
- 5 - more than 50% of class time

emphasis placed on drill

Is drill viewed as important to some other level of practice or is it seen as leading directly to martial arts expertise, drill differentiated from application and learning of techniques by simplicity (i.e., punching a pad is drill, an exercise where you block a strike, neutralize the attack, and counter attack is a technique or application).

- 1 - No drill used
- 2 - Drill rarely used (once a class or less)
- 3 - Drill used up to 20% of the time
- 4 - Drill used up to 50% of the time
- 5 - Drill used more than 50% of the time

Meditation:

Meditation for purposes of this study can be regarded as active relaxation involving no motion (i.e., many forms of Yoga would not qualify as meditation under this and while many consider T'ai Chi to have a meditative nature, it would not qualify as meditation). Generally meditation involves - relaxation of muscles, awareness of body and process, reduction in "immediacy" of self and/or body, harnessing of internal energies. This is very vague and sketchy, but I'm trying to allow for the variety of interpretation on meditation to be found within the various traditions of martial arts practice.

- 1 - Meditation plays no role whatsoever
- 2 - Meditation discussed as out of class activity but never practised
- 3 - Specific instruction in meditation given and occasional practice time allotted
- 4 - Meditation regularly practised for short amount of time (less than 15% of class time)
- 5 - Meditation practised considerably (more than 15% of every class)